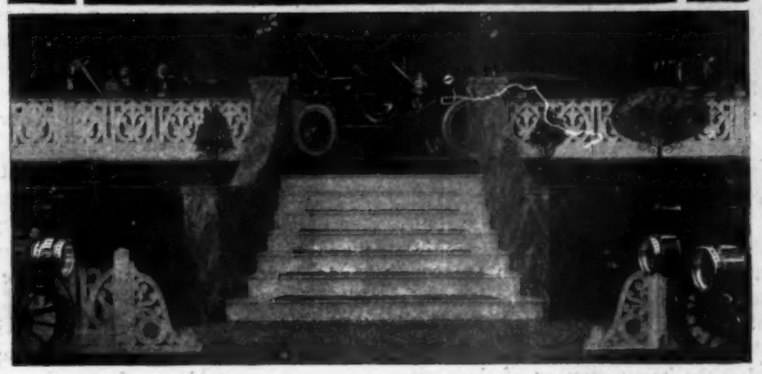
VOL. XX NEW YORK—THURSDAY, MARCH 11, 1909—CHICAGO No. 10

THE AUTOMOBILE

BOSTON'S BRILLIANTLY SUCCESSFUL SHOW

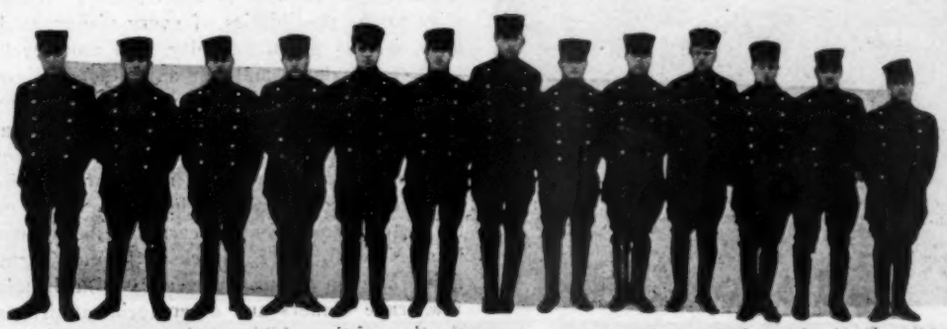


BOSTON, March 10.—This city's automobile show success is always spelled with a big S, and this year is no exception to the rule; if anything, the present show so far has exceeded all its predecessors in attendance and business transacted, and everybody who has space is optimistic over the interest that has been demonstrated since the exhibition began. On the opening night there was a tremendous attendance; as many people crowded into the building as it possibly could hold. Aisles and spaces were so thronged that it was next to impossible to see anything, and it is estimated that more than 40,000 people passed the ticket takers. First-night attendance, however, signifies little except general public interest, and the sales which were reported were mostly those which had been worked up to the signing point before the show began.

With the first of the week, however, began the real business of the show, and it was apparent Monday that all previous records would be broken, for there was a heavy attendance from the time the doors opened, and all day long the salesmen and demonstrators were kept hustling with prospects who took a genuine interest in the cars. Reports of sales were made with unusual frequency and with more ring of genuineness than is customary. Not a few exhibitors have already secured customers for all the cars they have on exhibition, and have taken orders for many duplicates. Even those concerns which have come to the Boston show with new cars, not previously exhibited here—and there is a larger number than in any former year—are well satisfied with what has been accomplished thus far, and are encouraged as to the business outlook for the spring season. There seems every reason to believe that any make of car which can demonstrate reliability and good riding qualities will not lack for patronage this season in New England.

Boston usually has some novelties to offer, and this time they are very plentiful. There is a compressed air car, for instance, a decided novelty that has not been exhibited elsewhere. This machine has a two-cylinder air-cooled horizontal engine in front, combined with which there is an air compressor and a superheater. The superheating is accomplished by means of the exhaust and the superheated compressed air is delivered to a four-cylinder air motor which in turn drives the car. The advantage claimed for this method of operation is economy and the absence of such complications as gear transmission and clutch. The air motor is used for braking purposes, but the car also has an emergency brake as a part of its equipment.

Another new car is the Panther, a little single-cylinder machine listed at $300 and equipped with a disc clutch and gear drive. The Jewel is a third new machine in Boston. This car has a single two-cycle cylinder rated at 10 horsepower and is listed at $500. The Pickard, Herreshoff, Hupmobile, Velie,



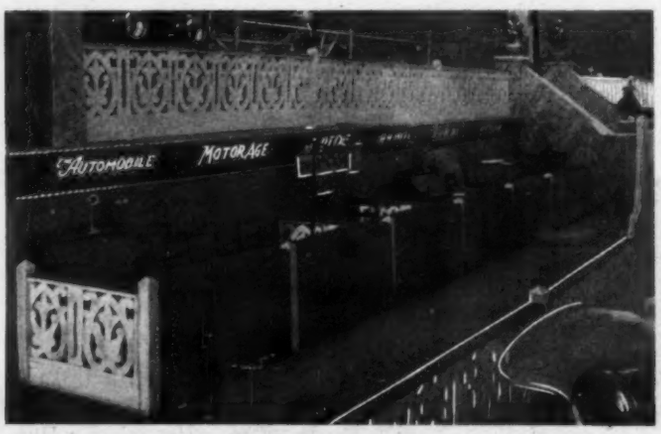
The Efficient Corps of Pages that Was Uniformed in Scarlet and Black.

Taking in the Exhibits from Rear of Mechanics' Hall.

American Simplex and Brownie cars are also newcomers to this city. Then there are a number of cars, which were shown in New York but which have not previously been shown in Boston, such as the Inter-State, Oakland, Lancia, and Pittsburg Six. An unofficial count puts the total number of different makes of cars on exhibition at eighty-two, which is believed to be a record for any show in the country. The representatives of these eighty-two makes are exhibiting about two hundred and seventy-five separate cars, the count including chassses and all the different types of pleasure cars.

In popularity of type the standard touring car easily leads, and it is a noticeable fact this year that the exhibitors are putting the five- and seven-passenger touring cars in the conspicuous places of the spaces, instead of featuring the toy tonneaus, baby tonneaus, double rumbles and other fancy styles. Next to the touring cars the roadsters are popular, but practically every exhibitor states that the larger number of show visitors is looking for cars that will carry the whole family rather than for sporty vehicles. The Boston show is a little late for enclosed bodies, so there are not as many limousines, landaulets and town cars in evidence as there were at some of the previous shows this season, but in quite a few exhibits there are some handsome enclosed bodies. One of the most striking of these is that ordered by the actor, Nat Goodwin, for his bride. It is on a six-cylinder Welch chassis and is an enormous affair equipped with bath tub, bunks and all sorts of conveniences to enable its owner practically to live on the road.

In every department the Boston show is larger than ever before, and this is especially true of the commercial vehicle section in the basement. The commercial vehicle is experiencing what is expected to develop into a good-sized boom in this city, and the manufacturers and agents are aware of the possibilities in this direction and have put on view an exceptionally fine lot of vehicles ranging from a light delivery wagon to immense five-ton trucks. Not a few of these vehicles are to be delivered to local houses as soon as the show is over, and the names of these concerns on the trucks is somewhat of a revelation in the way the commercial automobile is being taken up. One of the best exhibits is that made by the Rapid, consisting of a large number of complete vehicles and chasses. The Studebaker Company, D. P. Nichols & Co., General Vehicle Company and Knox are also large exhibitors in this section. The motorcycle division is more extensive than it has been in other years, more different makes of the two-wheelers being shown than were exhibited at either of the New York shows.



Where the Leading Trade Journals Were Quartered.

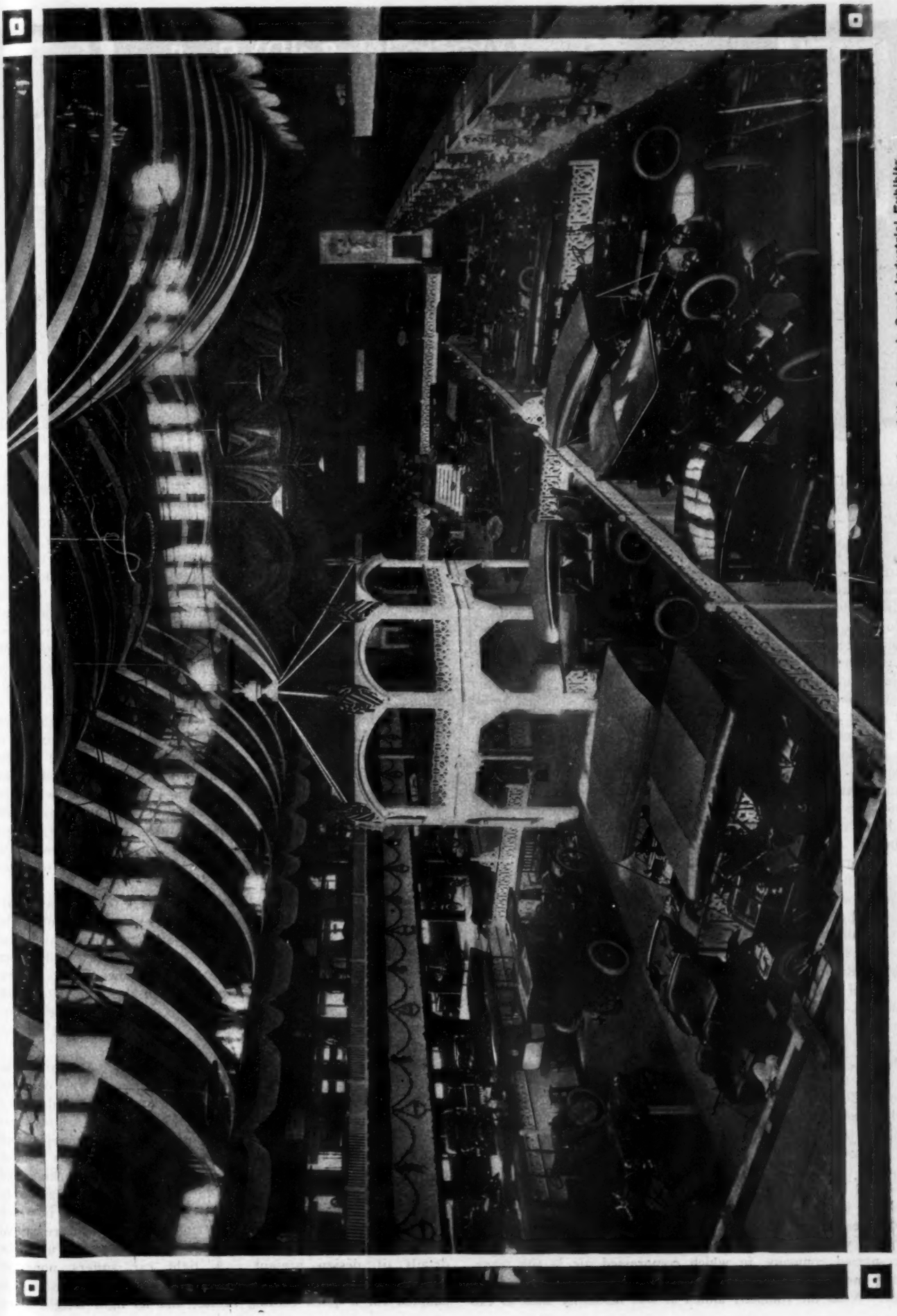
Every year the accessory division grows, and Manager Campbell had difficulty in taking care of all who wanted show space this year. He drew a line against all applicants unless their goods were actual accessories, but even at that all the balcony spaces and not a few in the basement are occupied. The tire exhibits are larger and more numerous than has ever before been the case in Boston, and practically every leading manufacturer of speed-measuring instruments, oils, shock absorbers, lights, warning devices and the like, has space, and all claim to be well satisfied with the attention their exhibits are receiving from the show visitors. Even those exhibitors who by force of circumstances were crowded away into the most inaccessible corners say that people are seeking them out and are taking extraordinary interest in what they have to show and say—all of which demonstrates that the New England public is not only auto-wise but auto-enthusiastic.

There is a very good representation of foreign cars at this show, though the New York importers have not given the Boston exhibit as much attention as they do customarily. The Fiat has the finest display of foreign machines that has ever been made here, with the Lancia a close second. The Renault has an excellent showing of cars, and the Panhard branch is exhibiting two machines. The new American Napier, which is being turned out by the reorganized Napier Company of America, attracts a good share of attention. Very little has been heard of this car for a year or more, but it is said that the company is now in a position to go ahead and manufacture machines in quantity.

Manager Campbell is looking forward to closing the show next Saturday night with a larger net profit to the credit of the Boston Dealers' Association than at any of the previous six shows given here under its auspices. The first of the week attendance is largely from Boston and vicinity, but before the week ends, with continued good weather, there is every probability that there will be a very large throng of people from Maine, New Hampshire, Vermont and western Massachusetts.

The extra features of show week have been numerous. Tuesday evening Paul Revere Hall was thronged with members of the Bay State Automobile Association and their ladies at the ball given by the association. This was the first attempt of the show management and of the Bay State to hold a social affair in which the ladies participated, but it was a thorough success. Dancing began at 11 o'clock, a half hour after the close of the show, and it was not until an early hour Wednesday morning that it ceased, and the dancers went home in the limousines and taxicabs. To-day has been a very busy time at the show. For one thing, it has been dollar day, when the exhibitors expect to meet their choicest prospects, and therefore have been keenly alive to the possibilities of every visitor at the spaces. Secondarily, it was motorcycle day, and motorcyclists from all parts of New England, and not a few from New York, were here. Thirdly, the executive committee of the American Automobile Association held its annual meeting in Mechanics' Building, and everybody was on the *qui vive* to see if any action would be taken in regard to the Glidden tour or other important matters.

To-morrow (Thursday) the feature is the run from New York to Boston, in which many cars have been entered. The cars will leave New York at 8 o'clock in the morning and are expected to finish here in the early evening. Incidentally there are not a few trade dinners and other social affairs on hand to take up the time of the exhibitors after 10:30 at night.



From the Huntington Avenue End of the Main Hall the View Was Impressive—a Fitting Culmination of the Season's Great Industrial Exhibits.

The Reflection of Thousands of Brilliant Lights at Night Mellowed the Decorations with a Soft Glow.

PYRAMIDED superiority is the summation of the increments for quality, eked out of all the cars, but the height of the pyramid, and its nice proportions, gained immensely at the Boston show, due to the presence of cars of splendid promise, exhibited for the first time, braving the metropolis of the sagaciously conservative, at small risk of adverse criticism, due to the enlightened state of automobile designing on the one hand, and the profusion of superior materials to be had for the asking.

Buyers of cars have automatically contributed a large quota to the success of the ventures in that they now know what is best for use, and it is but to supply definite wants when new cars are projected into the arena of popular favor. Because builders, and buyers, alike, understand the situation perfectly so-called freaks and slants at odd angles from the designer's point of view are not indulged in, and it was regarded as distinctly elevating to go into the Boston show for no other purpose than to critically examine the newcomers, basking in the sunlight of conservative features, strong with good materials and bristling with that formidable array of armament, beaten into form sublime in the smithy of simplicity, launched in a sea of art.

Napier, American Napier Company, Boston.—Perhaps the new 40-horsepower Napier is so much in line with the generally well-known characteristics of the "parent car" that its presence at the show indicated the usual interest rather than something to be called by a new name. At all events, as the illustrations here offered will show, the reasons for the keen interest taken in the Napier exhibition are too good to require comment. As a lightweight automobile of vast indurance and great flexibility, the new model struck a responsive chord in the hearts of the buyers of Boston, and with such features as Bosch magnetos of the latest and most approved type, for the ignition system, coupled with the utility of the new Hoyt carbureter (designed by Superintendent F. C. Hoyt, of the company), the situation looks pleasant. But the Napier company proposes to go far beyond the mere production of a standard touring car, and in the making of the roadster type all the so-called innovations of automobiledom will be boiled down to absolute finality before they can fit into a description of this Napier creation. The future of the company will be to the tune of a new light delivery wagon, and it is whispered about that the new "compressed air" exploitation will make for history in transmission systems in some Napier cars.

Compressed Air Power Company.—The novelty of the Boston show was conceded to be the landaulet, as exhibited by the above-named company, in which compressed air is the transmitting medium; the prime source of power being a gasoline motor. What the company aimed at was flexibility such as can never come with the use of sliding gears and the car, as it was seen at the show, impressed the spectators as being the product of experts with definite ideas of what they want to accomplish.

The installation includes an air-cooled gasoline motor, cooled by the exhaust air, from the air-power motor, it being the case that the exuding air from the power motor is cold enough to form ice if it is expanded from pressures such as can be used, and it follows that there is a wealth of a cooling medium with which to keep the air-cooled gasoline motor at any desired temperature. The gasoline motor drives a compressor, and the compressed air derived therefrom is passed through a "re-heater" so that it enters the air-power motor at high heat and pressure furnishing power to the road wheels of the car.

The high pressure heated air is enabled to expand to a low point without "iceing" the valves, and the economy resulting is very high, indeed. The air-power motor, like a steam engine, will run in both directions, and power can be realized at all speeds. Regulation is precisely on the same basis as would be the case with a good steam engine and as a result transmission gears are not needed at all. Plainly, then, the flexibility which is present in steam practice is expected in connection with the car as fitted with the air system, which reports seem to agree with.

The exhaust air is available for all auxiliary purposes as inflating tires, blowing the horn, and, as before stated, in cooling the gasoline motor. The equipment has attracted much attention, and it is said that the Napier Company of America will fit out some cars this year with the compressed-air power plants of this make. Frank Lester, whose experience in this line dates back for some years, rushed the first car to completion for the Boston show, beginning last Thanksgiving Day at the plant of the Atlantic Works, East Boston.

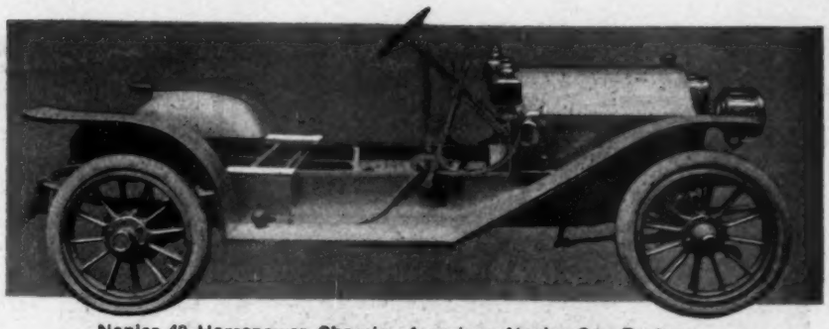
Herreshoff, Herreshoff Motor Company, Detroit.—The makers of the Herreshoff state that their car was designed primarily for the owner of a heavy car who desires in addition a machine suited for fast city and suburban work. A heavy car in congested traffic is often in the position of the proverbial bull in a china shop; it blocks the street every time it turns around. if it is true that it can be turned around without backing and filling, so to speak, several times, due, as it is well understood, to the law governing the turning radius of all automobiles, in which wheelbase and angle of the front road wheels, as they are canted for turning, render the problem easy, or not, depending upon the details of design present. A light car suffers none of these disadvantages; of comparatively short wheelbase, it is adapted for a quick turning radius, and its light weight alone

makes it easily checked or accelerated. The Herreshoff motor has four cylinders cast in pairs, of 3 3-8 inches bore and 3 3-4 inches stroke. It is designed to run at from 200 to 2400 r.p.m., and is rated at 24 horsepower. The crankcase casting is extended rearward to include the flywheel and the gear box, the essentials of the power plant thus forming a single, compact unit on a three-point suspension. The motor is fitted for double ignition, but the magneto is listed as an extra; cooling is by a vertical tube radiator with thermo-syphon circulation. Power is transmitted through a 25-disc steel-on-steel clutch to a three-speed gear of the progressive type. The gears are of projectile steel, cut to insure absolute quiet and non-stripping. The drive shaft is enclosed in the torsion tube, and has a single joint of the spherical square type. The torsion tube has diagonal braces extending from the joint to the rear spring seats.

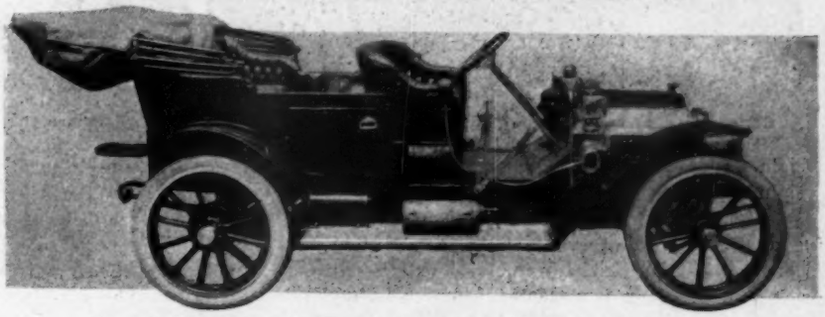
The running gear includes a live rear axle with floating shaft and a drop-forged I-section front axle, both carrying 32-inch wheels with 3 1-2-inch tires. Brakes are internal and external on the rear hubs; a single pedal controls the clutch and the service brake by a progressive motion. The chassis is fitted either with a five-passenger touring body or a neat rumble runabout. Herreshoff cars are handled by the French Carriage Company, 92 Summer street, Boston.

Pickard, Pickard Bros., Brockton, Mass.—This car made its début "at home" and the Model E runabout at $750 measured for supremacy with a long steel tape, most accurately graduated, so the story goes. In this car the front axle is of manganese bronze, of the I-section, nicely proportioned. It will be remembered this is the famous bronze which costs several times the price of steel, and the strength of the bronze is 80,000 pounds per square inch tensile strength, with an elastic limit of 36,000 pounds per square inch. The rear axle is of the live floating type fitted with ball bearings, light, strong and with good ground clearance under the differential housing. The motor is air cooled and is rated at 25 horsepower and rests on a sub-frame, taking its mixture from an automatic carbureter, exhausts into a muffler which renders the exhaust silent, but the performance is in the absence of any back-pressure; 20 gallons of gasoline will fit in the tank and it is ignited at the propituous instant through the good office of a coil of suitable quality using electricity from dry cells. With a rated speed of 50 miles per hour, in view of the commodious body and upholstery that ranks with comfort, it is easy to account for the unusual state of affairs which makes the Pickard "a prophet at home." The South End Car Company holds the agency for the Pickard and it looks like a happy combination.

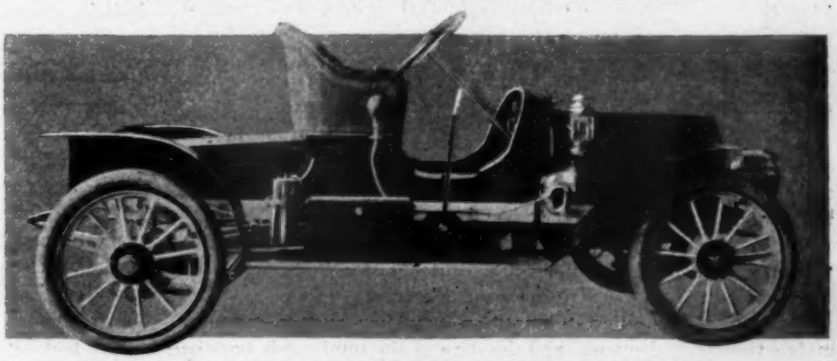
Hupmobile, Hupp Motor Car Company, of Detroit, Mich.—Entered the show for the first time, but by no means as a stranger, due to the facility with which news travels and the splendid home performance of the cars of this make. The 16-20 Hupmobile is distinctly different, made so for a purpose. Briefly, this car is low in power, but it is also low in



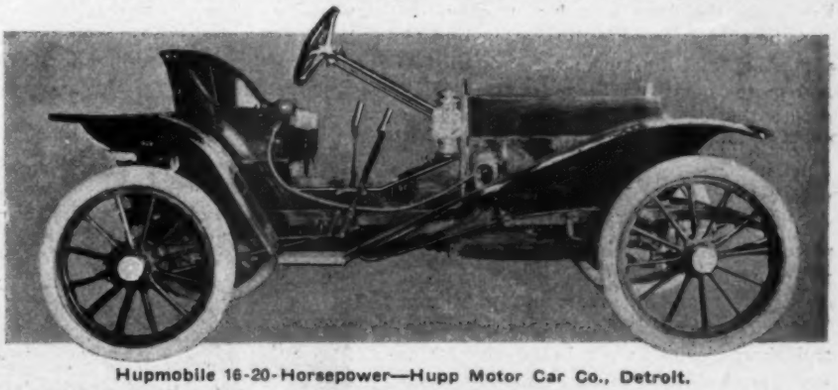
Napier 40-Horsepower Chassis—American Napier Co., Boston.



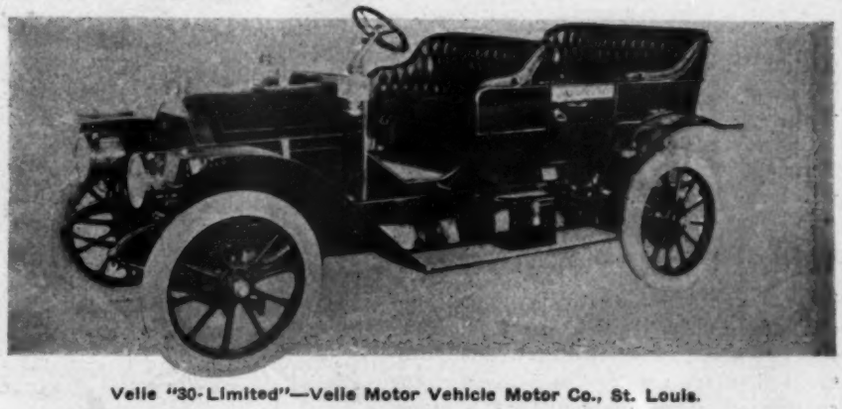
Herreshoff 24-Horsepower Car—Herreshoff Motor Co., Detroit.



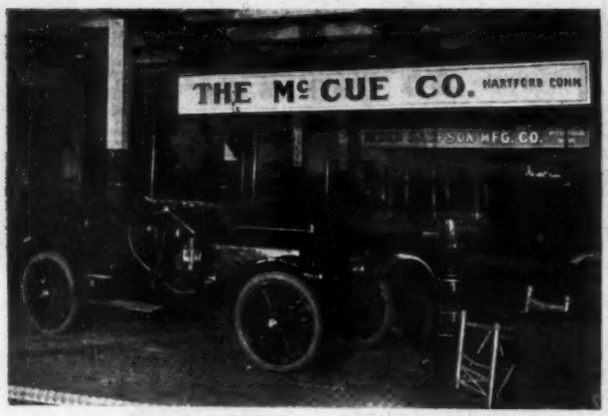
Pickard 25-Horsepower Air-Cooled—Pickard Bros., Brockton, Mass.



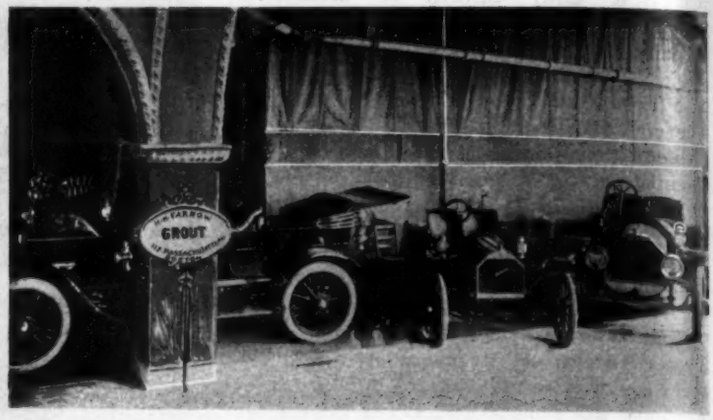
Hupmobile 16-20-Horsepower—Hupp Motor Car Co., Detroit.



Velie "30-Limited"—Velie Motor Vehicle Motor Co., St. Louis.



Connecticut's Newest Car—The McCue, from Hartford.



Where the Grout Cars Were Displayed by Agent Farrow.

weight. It is, therefore, a big automobile since the reduction in weight is not at the expense of cramped quarters within the ample folds of the splendid body that graces the chassis. Looking at the "Mercedes" front of this car, glistening in its simple elegance of design, excites interest with a dull sense of high price, which feeling is dispelled when the genial salesman pronounces the sentence "The price is $750." The car weighs 1,100 pounds, is of absolutely conventional design, with channel section steel side-members, half-elliptic springs on front, three-quarter platform springs to the rear, shaft drive, with two sets of splendid brakes, and the water-cooled motor is fitted with a Breeze carboreter, while the cooling is done with a tube radiator of very neat and substantial design. It is needless to point out that the propeller shaft is provided with protected universal joints and that the car as a whole is a sure cure for skeptics. Henry F. Farrow is the agent, at 117 Massachusetts avenue.

Velie, Velie Motor Vehicle Company, Moline, Ill., entered Boston with the "30-Limited" and settled down to be admired. The touring car of the line sweeps back from the cooler, which starts on the center line of the front axle, just as modern automobile designing demands, and the flare of the mud-uards has the advantage of being good; they look like business, too. In the first place, the shape is such as to allow one to work on the tires and the chassis is perfectly protected. It is a chassis well worth protecting, and the long wheelbase allows of a body with room, and more room. The three-quarter elliptic springs in the rear assure that level platform about which we hear so much, and the steering gear is not only in fine form, but the materials, as well as the way of their use, augurs for stability. The hood is of nice shape held in place with straps of heavy section, and the power plant, nested under the bonnet, is a consistent and "sweet running performer." The price of the car is $1,750, ready to run, and sharps, who keep tabs on such things, say "the Velie has a clean pair of heels." The rest of the company's line included a roadster, low, long and rakish, light, lythe and takash. The Boston end is handled by Kilbourne Corlew Motor Company, located at 26-28 Bowker street.

Manager Campbell Consults the Telephone Directory

Chas. Waugh & Company, Cambridge, Mass.—The American one-ton delivery wagon and five-ton truck and the Commercial 1000-pound electric wagon comprise the line of commercial cars exhibited at this stand. The truck is driven by a four-cylinder, 40-horsepower motor with separately cast cylinders, placed under the footboard. Transmission is through an inverted cone clutch, two-speed planetary gear and side chains. The construction seems substantial, as is fitting, considering the load to be carried; the rear axle is a solid steel bar, 2½ inches square, and the pressed steel side bars of the frame are 6 inches deep. The delivery wagon carries its motor under a regulation hood; the cylinders are cast in pairs with opposite valves, and the change-gear is of the three-speed selective type. The Waugh Company also makes cape and canopy tops, and does a considerable business in making parts to order from original designs and in reconstructing and remodeling.

AMERICAN NAPIER COMPANY REORGANIZED.

Boston, March 8.—With the consent of all the stockholders, the Napier Motor Company has been reorganized as, or rather superseded by, the American Napier Company, a Maine corporation with $1,000,000 capital, most of which has been written up. The new company is headed by Otto B. Cole, as president and general manager, with M. C. Barnard, vice president, and Fred L. Hall, treasurer. These three, with Wm. H. McMasters, Joseph Ellwell and Leon Pettit, Jr., constitute the new board of directors, the old board having resigned.

The plant of the older concern, at Jamaica Plain, Mass., has been acquired, put in working order and some additions started, among which is a three-story machine shop. A number of men have been put to work and the factory is busy getting out machines for spring and summer delivery.

The new company will have the same arrangements with the English Napier Company as did its predecessor in the way of contracts and patent rights. Consequently, the output will be patterned along the line of the latter, although by no means as extensive. This will include the new 40-horsepower four-cylinder model as exhibited at the Boston show, a medium-priced light weight roadster, a taxicab model and possibly a new style of light delivery wagon. As light weight is the Napier slogan, the details of the roadster are awaited with great interest, the larger car at the show having shown up well.

Among the features of the cars will be the rear axle construction, double ignition with Bosch magneto as the principle source of current, and a special carbureter invented by Superintendent F. C. Hoyt. A few cars will also be built using the compressed air type of transmission; in fact, the Compressed Air Power Company has been given an order for the transmissions.

The details of the New York City branch are being arranged, as are also other branches. For the convenience of Boston owners, a shop repair department has been established.

What Leading New England Accessory Makers Had to Offer

Atwood-Castle Company, Amesbury, Mass.—Gas and oil lamps of all kinds and sizes may be seen at this exhibit. One of the new gas headlights is made especially to harmonize with the straight-line bodies now in vogue. Its lines are simplified as much as possible, and the ventilators in the hood are made diamond-shaped, giving an unusual and distinctive touch to the lamp. Not to show any partiality, however, the company shows another lamp in which not a single straight line is to be found, while curves riot in luxurious abundance. All lamps can be furnished in the popular black finish at a slight extra charge.

Allen Fire Department Supply Company, Providence, R. I.—The Allen two-port carbureter seems to go back to first principles in some respects, as it embodies a positive control of the vapor and auxiliary air operated directly by the throttle. The device gets its name from its two parallel passages, one for pure air, the other containing the spray nozzle. The throttle is a flat plate with suitably shaped openings which slides over the upper ends of the two passages and opens them in proportion to the speed. In this way a high degree of simplicity is attained; there are no springs to be changed in tension by heat or long use, no diaphragms, no dash pots or sensitive valves. The device seems substantially built, and with proper proportioning of the openings, which no doubt has been attended to, it should give good satisfaction.

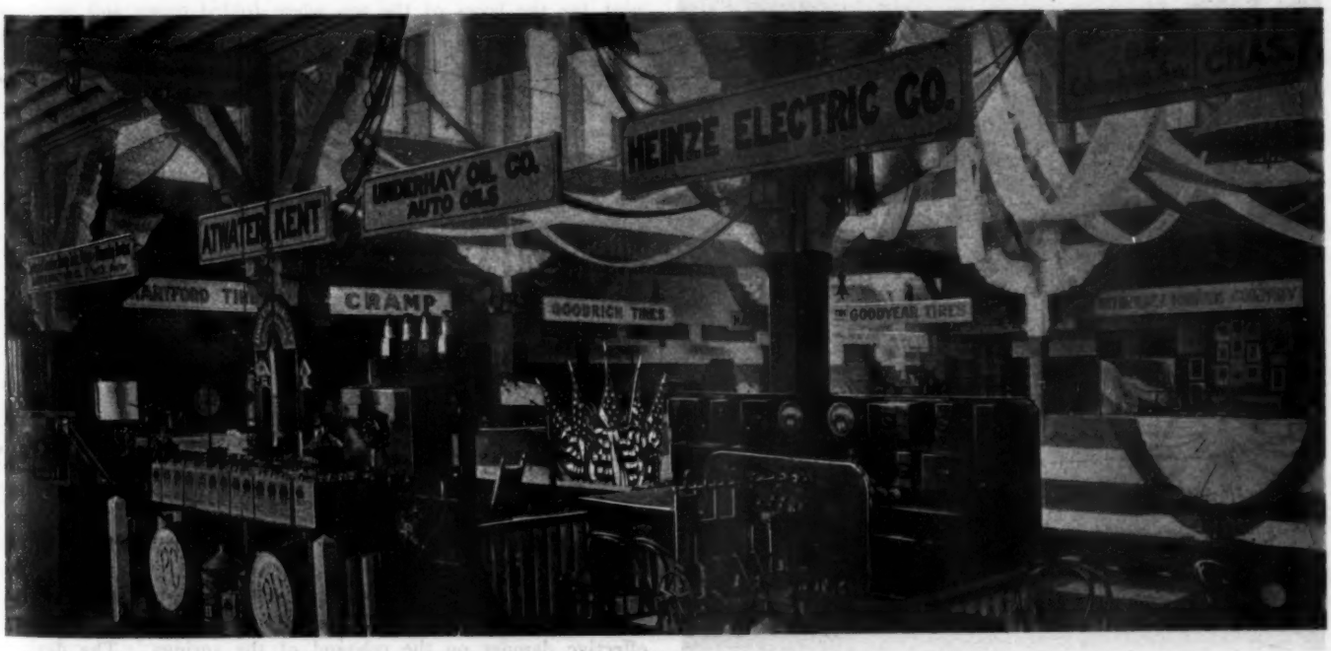
Bi-Motor Equipment Company, Boston.—The difficulty often found in arranging a tail-light to light up the rear number tag is obviated by an electric device shown at this stand, which may be attached to any part of the car. Those who own machines with extra long tonneaus will find the comfort of their passengers increased by a folding foot-rest, also made by the Bi-Motor Company. In addition to a full line of accessories this company handles the Pfanstiehl coils, which are new to the Eastern market. These are of the same design as the coils used in x-ray work, and give what the makers call a "caterpillar flame." Any Pfanstiehl coil unit, with a ten-volt current and an x-ray tube, may be used to produce x-ray. The coils are tested on a 16-volt current.

Boston Auto Gauge Company, Boston.—The "Triumph" tank gauge is claimed to be unique in that it necessitates no hole through the wall of the tank, and breakage of the glass will not cause a leak. The interior part of the gauge consists of a tube with a spiral slot, with a float inside which engages with the slot so as to turn with every rise of the level in the liquid. The float carries a small magnet, and the gauge needle, being itself magnetic, follows the movements of the float on a graduated scale. Another form of the gauge may be fitted to the dashboard.

Burn-Boston Battery Company, Boston.—This company shows a new type of wet primary cell, intended to replace dry batteries. These batteries are square in shape, and it is claimed that they lose no current when not in use and will not dry up or freeze. Its freedom from deterioration makes it especially adapted for use as an auxiliary with magnetos, as ordinary batteries when used in this way waste more current than they give. The amperage is about the same as that of an ordinary dry cell. The company's headquarters are at 9 Duane street, Boston.

L. C. Chase & Company, Boston.—All kinds of fabrics for automobile use are shown at this exhibit, but the specialties are mohair mackintosh, rubberized cloth and "Chase leather," for covering folding tops and slip covers. The rubberized fabrics are made in both single and double texture, in a variety of grains and finishes. In double texture these fabrics make an unusually reliable top material, as they contain two thicknesses of cloth with a rubber proofing between, and a second rubber coating between. The company's offices are located at 89 Franklin street, Boston. A folder is being issued containing samples of the different fabrics.

Coates Clipper Mfg. Co., Worcester, Mass.—Autoists who take pride in the neat appearance of their brass work will be interested in the Coates auto buffing outfit, which with a mini-

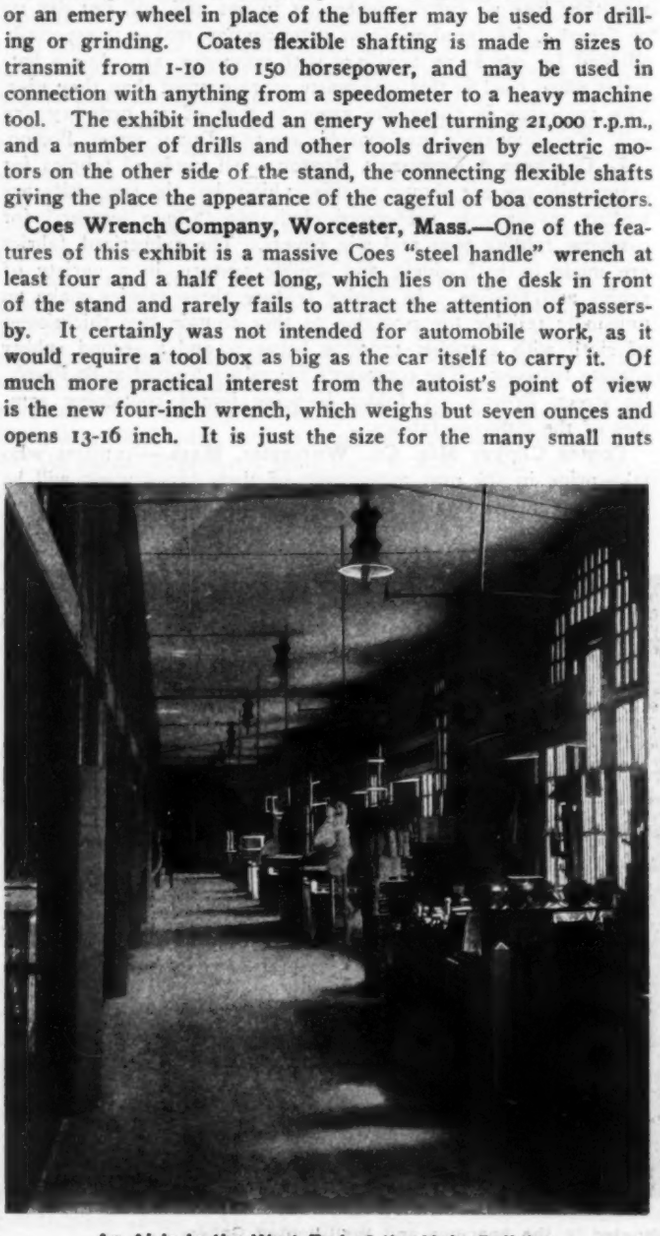


Most of the Accessory Exhibits Were Admirably Situated in the Spacious and Well-lighted Gallery.

Where the Atwood-Castle Lamps Were Quartered.

mum of labor will enable him to use his lamps as mirrors. The outfit is driven from the right rear wheel of the car, previously jacked up, and sufficient length of shafting is furnished to reach the headlights without difficulty. The same outfit with a drill or an emery wheel in place of the buffer may be used for drilling or grinding. Coates flexible shafting is made in sizes to transmit from 1-10 to 150 horsepower, and may be used in connection with anything from a speedometer to a heavy machine tool. The exhibit included an emery wheel turning 21,000 r.p.m., and a number of drills and other tools driven by electric motors on the other side of the stand, the connecting flexible shafts giving the place the appearance of the cageful of boa constrictors.

Coes Wrench Company, Worcester, Mass.—One of the features of this exhibit is a massive Coes "steel handle" wrench at least four and a half feet long, which lies on the desk in front of the stand and rarely fails to attract the attention of passers-by. It certainly was not intended for automobile work, as it would require a tool box as big as the car itself to carry it. Of much more practical interest from the autoist's point of view is the new four-inch wrench, which weighs but seven ounces and opens 13-16 inch. It is just the size for the many small nuts



An Aisle in the West End of the Main Building.

on the carbureter and ignition system, and is especially adapted for motorcyclists' use.

J. W. Colgan Company, Boston.—Not only do demonstrators and agents usually desire to have the name of their car prominently displayed on the radiator or running board, but there is a rapidly growing custom among private owners of giving their cars an individuality by the use of monograms or crests. The Colgan Company, Sudbury Bldg., Boston., makes a specialty of this sort of work, and their monograms are original and distinctive in style. It also makes medallions to be attached to robes and other loose impedimenta. The exhibit includes specimens of the different styles, and an illustrated booklet is also issued. In addition to these, any design can be made to order.

Couch & Seeley Company, Boston.—A scale no less than 28 inches long, with individual 5-16-inch figures for each mile, is the distinguishing feature of the Casgrain speedometer made by this company. The device itself is of distinctive form, consisting of a horizontal cylinder intersected near the right-hand end by the vertical drive shaft. The right-hand portion contains the trip and season odometers, and the larger left-hand portion the speedometer proper. The figures appear through an aperture in the case, and no more than three can be in sight at one time. The principle is novel; a horizontal shaft carrying paddle blades rotates in a liquid in the center of a cylinder carrying the figures of the scale arranged spirally. The friction of the rapidly moving liquid then carries the scale cylinder around wtih it against the tension of a spring. As there is no mechanical connection between the driving mechanism and the scale all inaccuracy from wear is eliminated, and careful precautions are taken to insure against the escape of any of the liquid. The instrument is compact and of neat appearance.

Dover Stamping and Mfg. Co., Boston.—Sheet metal specialties of all descriptions form the basis of this exhibit. There are oil cans and oil guns of every shape and size, long spouts, short spouts and no spouts at all. The stand is walled in with galvanized iron drip pans, to be placed under the cars in garages. The pans receive all drippings of oil and gasoline, and not only keep the floors clean but considerably reduce the danger from fire.

Essex Brass Foundry Company, Cambridge, Mass.—As its name indicates, this company makes brass castings for all kinds of automobile and motor-boat use. One of its specialties is a patented folding-top support, which provides a resilient support for the bows of the top when folded down and prevents their breakage. It is made of manganese bronze and highly finished. Steering wheels and propellers for boats and door handles, foot rests, robe rails and other fittings for autos are also shown.

Federal Mfg. Co., Lowell, Mass.—The makers of the Rex storage batteries have put on the market a spark coil known as the Bliss, a feature of which is a new torsional vibrator. The vibrator points are made of a special iridio-platinum alloy to obviate pitting. The cases of the unit coils are of hard rubber and provided with anti-induction shields, which prevent the activity of one coil from exciting a current in its neighbor—often a cause of irregular firing. The coils are said to operate one 1-10 ampere.

Ernest Flentje, Cambridge, Mass.—Flentje shock absorbers are built on the same principle as the glycerine recoil checks used on 12-inch cannon. They consist of a cylinder and piston, one to be fastened to the axle and the other to the frame of the car. The cylinder is filled with glycerine, and the piston has bored in it six holes, two small and four large. All are open when the piston goes down, so that the downward motion is unchecked, unless it becomes too violent; but on the return stroke the large holes are closed by check valves, so that the glycerine must all pass through the two small ones. This makes a very effective damper on the rebound of the springs. The devices are made of phosphor bronze and steel, the cylinders being fin-

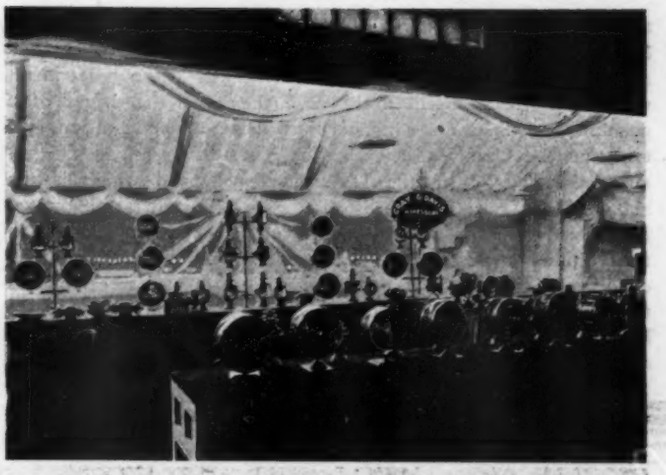
ished in nickel, while the hangers may be painted to match the rest of the car.

Gordon Auto Supply Co., Boston.—This company shows an extensive line of automobile supplies, among which may be noted the Whittaker tire chain. The cross chains of this device are made of hard steel wire, hand-welded, and copper-plated. The side chains are fitted with snap hooks, which simplify putting on and removal. The Gordon company is also New England distributor for the Geiszler non-sulphating storage battery.

Gray & Davis, Amesbury, Mass.—The Wridgway "No-glare" shade, shown on Gray & Davis headlights, is an innovation that will be welcomed by all who have ever been caught in front of a dazzling acetylene beam, as this shade prevents any diffusion of light above the level of the lamp itself. It consists of a series of thin horizontal plates across the face of the lamp behind the front glass. These are dull black on top, so that all upward rays are absorbed, and silver-plated beneath, thus intensifying the light cast on the road. The shade can easily be attached to any lamp. It is interesting to note that a law recently passed in New York makes the use of some sort of shade obligatory on headlights.

Heinze Electric Company, Lowell, Mass.—An exhibit at the Heinze stand which never failed to draw a crowd was a monster spark coil, two feet long, with distributor and plugs of proportionate size. The plugs, mounted high in the air, gave forth sparks of a size more suitable for a wireless telegraph outfit than an automobile; and the distributor, from which the cover had been removed, kept up a fine display of fireworks on its own account. On the other side of the stand was a dummy wooden model of a four-cylinder motor, the shaft of which was geared to one of the new Heinze magnetos. The whole apparatus was turned by a crank, and demonstrated very effectively the ease with which a car can be started with a modern design of magneto.

Hoffecker Company, Boston.—"The Steady Hand" is the watchword of this company, whose speedometers are now beginning their third year on the market. The mechanism works on the centrifugal principle, and the connection between the governor and the indicating hand is made by a special system of levers so arranged that no vibrations can be transmitted. The dial shows a circular miles per hour scale in heavy black, with a black indicating hand, and around the outside of this a trip odometer scale reading to 100 miles, in red with a red indicating hand. The season odometer dial is of the usual type, with figures showing through an aperture in the lower part of the dial. This speedometer is also furnished mounted by the side of a Chelsea clock, with a small electric light and reflector, and in this form is known as the "Hoffecker twin."



Here It Was that Gray & Davis Lamps Shone Brightly.

Holtzer-Cabot Company, Brookline, Mass.—These latecomers are showing the newest thing in electric horns. This horn is operated by a direct current and may be wound to work on pressures up to 123 volts for 5 hours without heating. By a new form of contact, sparking even at very high voltages has been practically eliminated. The horn is compact, water-tight and can be relied upon absolutely, which accounts for the fact that the United States Navy has adopted it for emergency signaling. This statement alone speaks volumes for the actual merit of the device.

Hopewell Brothers, Cambridge, Mass.—A spare tire carried on the running board or on the rear of a car at best does not add to its appearance, and to make this necessary article as little offensive to the eye as possible it is well to enclose it in a neat-appearing case. Such is the philosophy of the Hopewell Brothers. Their case is held on by two endless spiral-wound springs, and has no straps, buckles, buttons, or other exterior fastenings.

Hoyt Electrical Instrument Works, Penacook, N. H.—The Hoyt voltammeter consists of two separate instruments, the voltmeter and the ammeter, which are intended to be mounted

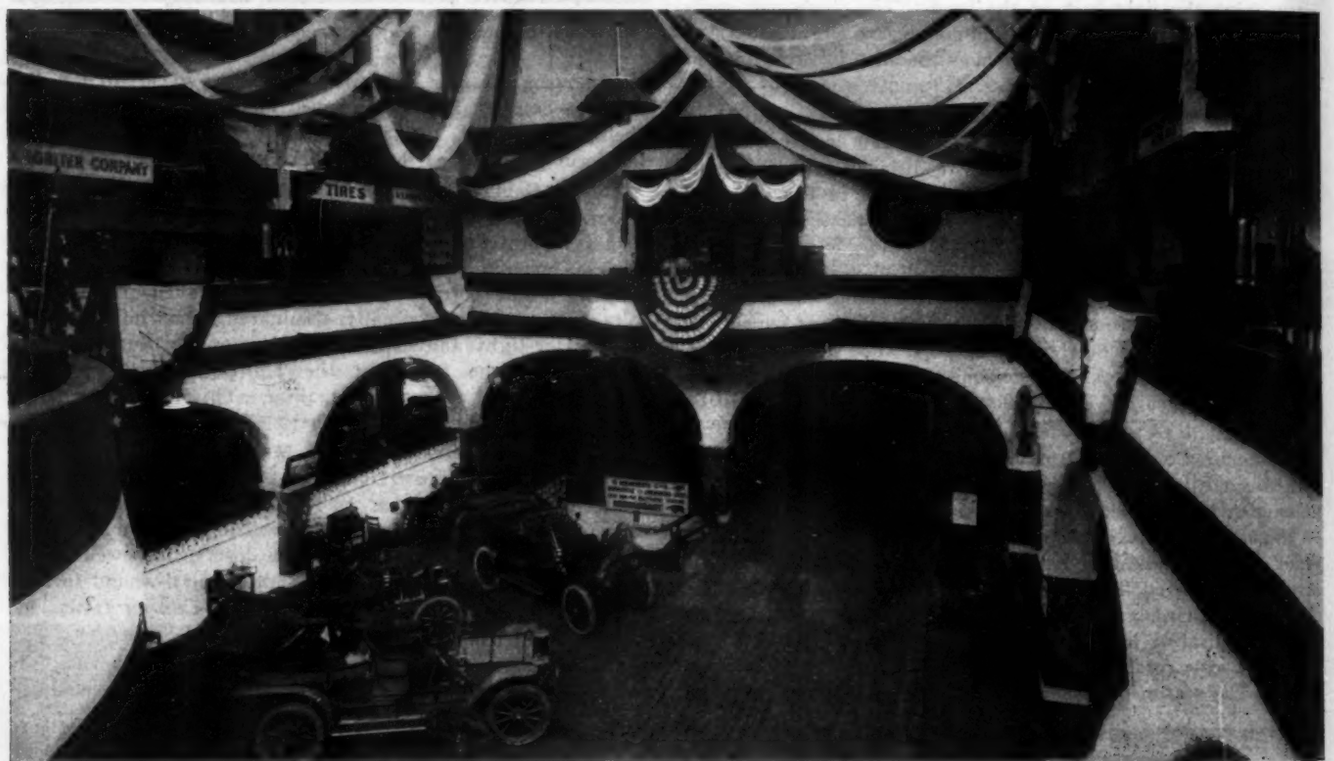
A Glance Down the Long Aisle in the Second Floor of Big Triangular Eastern Section of Mechanics' Building.

together on the dashboard. The windings of both are so calculated that they consume only a very small amount of current, and so they may be kept in circuit constantly without detriment to the batteries. Used in this way they give the driver of a gasoline car the same constant knowledge of his ignition system that the steam engineer has of his steam supply. The instruments operate on the D'Arsonval principle, which is the standard for scientific work. The moving parts are mounted in jeweled bearings, and although very sensitive to changes in the volume or pressure of the current are at the same time dead-beat in action. The cases are made in a variety of finishes to match the other metal work of the car to which they are to be applied. The voltammeter not only indicates the condition of the batteries at all times, but is also an efficient trouble-finder for any part of the ignition system, as the readings of the instrument often show where any fault lies. A booklet issued by the makers from their office at 161 Summer street, Boston, clearly explains the use of the instruments in this way, and also gives diagrams of the connections necessary to install them in the ignition system.

Chas. W. Kidder, Stoughton, Mass.—A new design of shock absorber which shows considerable merit is the Monarch. The principle is that of the cam with spring-pressed follower. The body of the device is rigidly bolted to the frame of the car, and the cam is connected to the axle by a crank and link of suitable length. The cam is shaped to give a gradually increasing resistance to excessive motion in either direction, and a positive stop at the limit of action which will be dangerous to the springs of the car. The mechanism is of course carefully enclosed to prevent the entrance of dust and grit.

Kilgore Mfg. Co., Boston, Mass.—The Kilgore shock absorber is designed to make use of the elasticity of air to eliminate the jolts and jars to which an automobile is subjected. A cylinder, full of air, and a tight-fitting piston comprise the essential parts of the device. A narrow passage in the cylinder wall short-circuits the air, as it were, and allows the piston to move with comparative freedom within a short distance on either side of the middle of its stroke; but a further movement of the piston covers the opening of this passage, and the remaining air is entrapped and compressed. A too violent movement of the springs is thus immediately checked.

W. H. Leland & Company, Worcester, Mass.—Well known to the trade as a manufacturer of finished crankshafts of exceptional quality, this company has also put on the market the Worcester spark coil. This coil is mounted on a swinging bracket especially convenient for use on roadsters and other cars with hooded dashes. If the coil is rigidly affixed to the dash, the hood makes adjustment of the vibrators extremely difficult. The "Worcester," however, may be swung out into full view whenever desired for inspection or adjustment. The high-tension terminals are arranged very neatly, ending in hard rubber bolts which slip into the bottom of the case and are held in place by nuts of the same material. The coil is fitted with a neat design of kick switch.

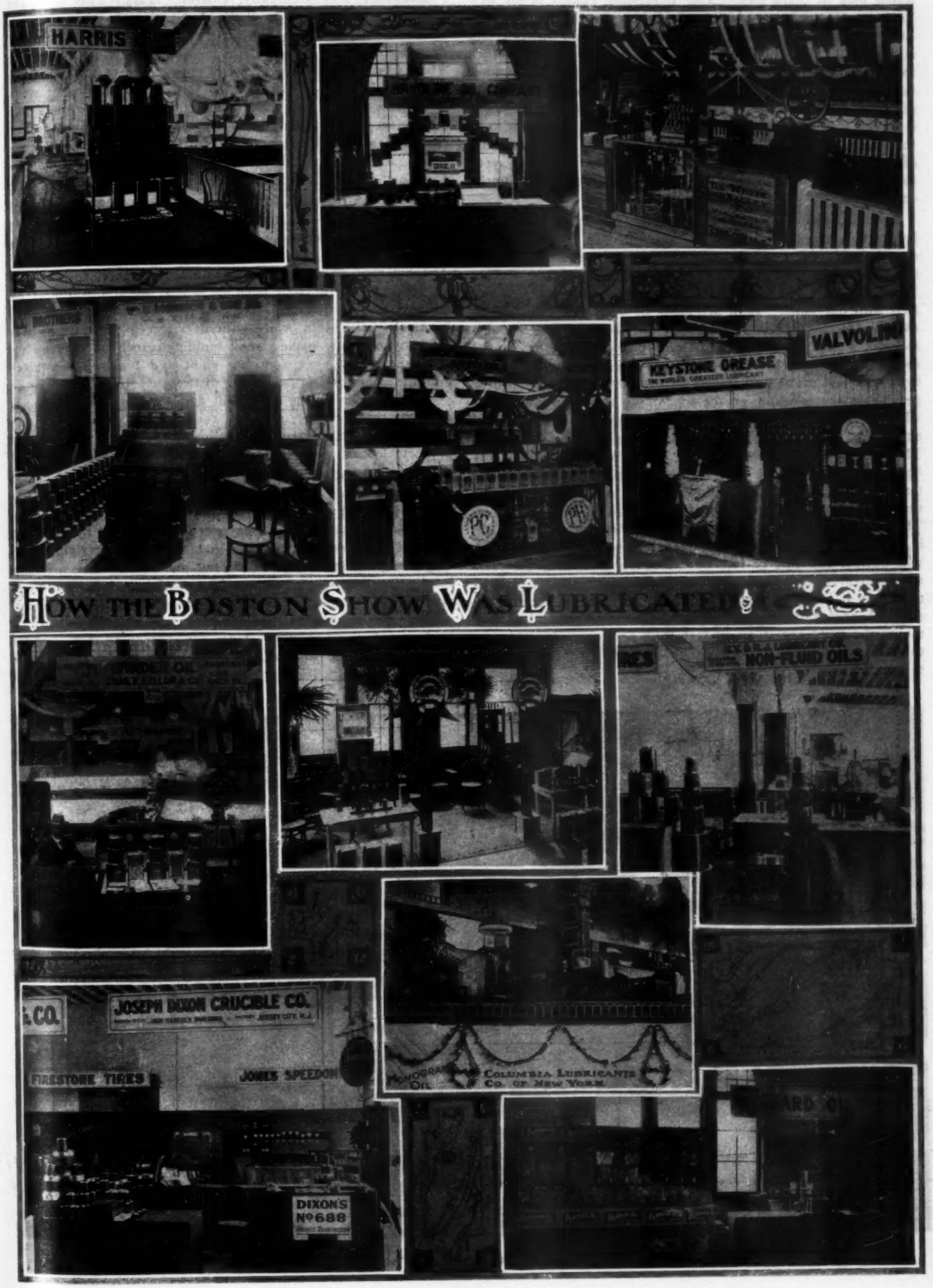


Looking Down from the Gallery in the East Wing, Where the Skylights Made the Lighting Advantageous and Effective.

Parker Mfg. Co., Roxbury, Mass.—The Standard speedometer marketed by this concern is another example of the centrifugal type. Its distinguishing feature, however, is the method of actuating the indicating hand by direct gearing from the governor weights, without cams or other intermediate mechanism. The scale is evenly spaced and easily read. A new form of trip odometer is used, in which the figures are on a ring-shaped plate beneath the face of the dial and appear through a suitable aperture above the speed-indicating scale. An improved form of swivel joint is used on the driving mechanism on the front axle and is claimed to obviate breakage of the shafts.

Pittsfield Spark Coil Company, Dalton, Mass.—The Pittsfield line of coils and plugs is already familiar to the trade, and the new "arc flame" magneto is rapidly acquiring the same prestige. Improvements in the standard accessories are in details only, such as a new side catch on the coil to hold the top in place, a coil with hinged bracket supports, and a kick switch for magneto and battery or double batteries with a safety plug which cannot be replaced by a nail or a cotter pin. A new plug is listed for use with the "arc flame" magneto.

Post & Lester Company, Boston.—This well-known supply house shows a standard line of accessories, ranging from



HOW THE BOSTON SHOW WAS LUBRICATED

watch fobs to spark plugs. One interesting exhibit is the new Rushmore Multiplex searchlight, for which this company is New England distributor. The front door glass, instead of being flat, is made in four slightly convex lenses, set vertically, which spread the light out in a broad, flat beam. They have the additional advantage of doing away with the flickering which is often so objectionable. Hanging across the front of the stand is a horn shaped like some monstrous variety of snake, the tube forming the body and the bell the head, made in exact imitation of a snake's head even to the forked tongue. It looks very formidable, and should be useful in securing a quick and unobstructed right-of-way.

Randall-Faichney Company, Boston.—This company is well known as a manufacturer of high-grade surgical instruments, and experience in this line may account for some of the fine workmanship to be seen in their automobile accessories. The feature of the Back Bay and Broadway oil guns is that they may be operated with one hand. Both are made of seamless brass tubing, and have metal plungers ground to fit—no packing. The line also includes a grease gun and a gasoline primer. Another useful specialty is the Webster gasoline tank gauge; this is actuated by a spherical metal float connected by a long arm and positive gearing to the indicator on the top of the tank. In connection with this is furnished a tank cutter, to be used in a bit-stock to cut a hole in the tank to which it is desired to affix the gauge. The float and other fittings may be introduced through this hole, without any other means of access to the interior of the tank, and without danger of dropping them inside. It is claimed that the hole can be cut and the gauge inserted in ten minutes. The very latest addition to the line is the Tzar horn. This is easily attached, requires no cleaning, never clogs up, and will outlast the car, in fact. It is operated by the exhaust, which insures more noise and greater convenience in operation. As it is readily attached to the end of the muffler, no especial preparations for its use are necessary, and a real mechanic could put it on in less than an hour. In addition to all these virtues, the price is low so as to place it within the means of all.

Shawmut Tire Company, Boston, Mass.—This company, recently established at 97 Bedford street, with factory at East Watertown, Mass., has put on the market a tire of standard design for which, however, it claims a number of advantages. The rubber is applied by a special process and is vulcanized at a comparatively low temperature, so as to avoid burning or weakening the fabric. This is claimed to eliminate blowouts to a large degree. Shawmut tubes are made of such tough rubber that no flap is needed to protect them from the lugs. The Shawmut Company also makes a full line of cement, acid, patches, tools, and other tire accessories.

Springfield Portable House Company, Springfield, Mass.—A 12 x 18 garage set up on this space leaves passers-by in no doubt as to the business of this company. The garage is formed of sections which may easily be taken down or put together. The hip roof is shingled and the walls weatherboarded. The swinging doors in front open to nearly the full width of the building, and two windows are provided on each side. It is attractively finished in white with dark green trimmings. The company not only makes small buildings, such as garages and work-shops, but even complete eight and nine-room cottages. Autoists who live in suburban districts, if they have even a very little room in the yard, will find the portable garages, as made by this company, not only good for the purpose, but they are in ornamental designs conforming to the needs. The cost of a "portable" will soon be made up in saving of garage charges.

Winestock Mfg. Co., Perkinsville, Vt.—Winestock spark plugs show a new application of the detachable principle. The shell is intended to be permanent in the cylinder; the plug proper is secured in the shell by a bayonet lock, released by a quarter turn. One model has insulated lugs projecting at right angles to give a good finger grip for turning, and the other has a folding handle for the same purpose. The spark gap is adjustable to micrometer fineness. The same company also makes "Cedaroleum," a hand-cleaning fluid which contains no alkali or grit. It is also used on oil or water stones for sharpening tools, and for cleaning windows, so that it is capable of serving for a wide range of uses with the automobile.

After Passing the Main Entrance Visitors Take Their Choice of the Two Diverging Aisles that Lead to the Exhibits.

TWO NOVELTIES SEEN AT THE BOSTON SHOW.

A Canadian Demountable Rim.—The Standard Combination Motor Rim Company hails from Toronto, Canada, and its exhibit at the show attracted more than a little attention, presenting novelty entwined with utility, in the form of a demountable rim. This rim is parted at one point, and means are provided for expanding the same to get it off of the felly. When the rim is removed it is possible to replace and inflate the tire, after which the whole will slip into place and the locking device enables the whole to be put into place quickly and securely. One of the side flanges comes off in the process and the tire can therefore be taken off and replaced easily. When the rim is mounted, side fasteners, at three points, prevent it from drifting off, and every provision is taken to enable the autoist to do the work with almost no effort, yet with all the security means are adequate for the purpose. The rim is drawn tight at the parting line by a double turnbuckle with a right and left thread.

Seaton Spring Wheel.—Hurbert H. Ward & Associates, with headquarters at 227-235 Williamson Building, Cleveland, O., exhibited the "seaton" spring wheel at the Boston show and while their presentation of the wheel was on a basis to attract attention the wheel would accomplish that feat unaided. Briefly described, the wheel is really a wheel within a wheel with a double set of concentric fellies, in which the inner felly is attached to the hub by spokes in the usual manner, and the outer felly is fastened to the inner one through a series of coil springs in which the axis is at right angles to the radial plane of the wheel. The solid rubber tire is on the outer felly and the resiliency of the tire coupled with the effect of the series of springs is claimed to more than compensate for the absence of air in the tire. The spokes of the wheel proper are of wood and in some measure the ability of this wood adds to the good effect. The wheel is nicely designed, amply strong for the purpose, and unlike most built-up wheels, it is not unduly heavy. As a rule the "flywheel" effect of wheels, in which a spring system is used, is far more than can be countenanced, unless it is that the car on which they are used is to go very slow.

RECENT DOINGS OF THE BOSTON TRADE.

Essex Brass Foundry Company, Cambridge, Mass.—These brass founders, formerly of Amesbury, Mass., have removed to Cambridge, where, at 141-145 Main street, greatly increased facilities will be afforded. As the name would indicate, the specialty is brass and aluminum castings.

Pickard.—The South End Motor Car Company, of 24-28 East Concord street, agents for the Atlas, Brush and Metz, formerly the Waltham, have taken on the Pickard, a new runabout emanating from Brockton and selling at $750.

Mora.—The G. H. Proctor Supply Company, of 25 Irvington street, has been appointed agent for the Mora car, manufactured in Newark, N. Y., and will start in immediately to push the sale of them.

Herreshoff.—The Boston agent for the Clement & Bailey electric, the French Carriage Company, will in the future sell the new Herreshoff car also. This concern is located at 92 Summer street.

American Simplex.—A recent change in address for the American Simplex Company, handling the two-cycle car in the Hub, places this company at 10 Columbus avenue.

Gramm-Logan.—S. M. Harmon, the Eastern representative of the Gramm-Logan Motor Car Company, manufacturers of motor trucks, has located at 22 Motor Mart.

Post & Lester Co.—The retail branch has moved from 815 Boylston street to 16 Park square. In addition, a wholesale store has been opened at 288-290 Devonshire street.

De Luxe.—Donald MacVichie, formerly of Chicago, has taken on the De Luxe agency and opened a store at 171 Huntington avenue, in the New Century Building.

Midland and Marion.—The New England Motor Sales Company, managed by B. F. Blaney, has taken this territory for the Midland and Marion cars.

Middleby.—The Boston agency for the Middleby, an air-cooled car, has been secured by the Malden Center Garage Company.

Kilgore.—The Kilgore Mfg. Co., manufacturer of shock absorbers, has opened a new salesroom at 585 Boylston street.

Holsman.—The agency for this high-wheeler has been taken by the General Auto Company, 10 Columbus avenue, Boston.

Hupmobile.—Henry F. Farrow, 117 Masachusetts avenue, agent for the Grout, has added the Hupmobile to his list.

Velie.—The Kilbourne-Corlew Company, 28 Bowker street, will represent this Western car in the Hub from now on.

Browniecar.—The New England Auto Company now has the agency for the new juvenile, the Browniecar.

Lambert.—Charles A. Eaton, handling the Lambert friction drive car, is now at 64 Pembroke street.

Matheson.—Roy Faye, the Matheson agent, has moved from Cambridge to 823 Boylston street, Boston.

MILWAUKEE SHOW OPENS SUCCESSFULLY.

MILWAUKEE, WIS., March 9.—Wisconsin's first annual show opened at 8 o'clock to-night, and it is already evident that the people of the State have long been waiting for this opportunity to see almost every known make of motor car assembled under one roof, beautifully decorated, and conducted by an organization like the Milwaukee Automobile Club.

Thirty-eight agencies purchased all the show space available, and cars are displayed even on the balcony floor of the Hippodrome. Four motor cycles are on exhibition in one corner, and the remainder of the floor is devoted to accessories, supplemented by displays in rooms off the main floor.

The show is proving to be one of the greatest society events of the season. In anticipation of this, the club arranged for luncheon service at all hours during the show periods, with music by orchestras and bands. Thursday will be "State Day." All of the local clubs affiliated with the Wisconsin State A. A. will be officially represented. Several tours have been arranged by clubs within striking distance of Milwaukee.

The success of the show was assured long before to-day. The club never feared that it would not draw big crowds, for hundreds of people from the interior are coming. A feature of the arrangements was an illuminated parade of over 100 demonstrating machines and private cars owned by club members, on Saturday night, March 6. This assisted greatly in waking up the people of Milwaukee to the fact that it has a real show "in its midst."

SYRACUSE SHOW ENGAGES DAI LEWIS.

SYRACUSE, N. Y., March 8.—A town that has once been bitten by the show microbe practically never recovers. This is the true explanation of the continuous increase in the number of automobile exhibitions. Last year this city was given its first show by the H. H. Franklin Mfg. Co. The affair was held in the Alhambra, the chief convention hall of the city, which was crowded during the days of the show. Following up the success of its initial show of last year, Syracuse is preparing for its second automobile exhibition, to be held in the New York State Armory March 24-27. This has been followed up by the recent formation of the Syracuse Automobile Dealers' Association, with a score or more of members, representing the automobile agencies in Syracuse and Central New York of many of the well-known motor cars. Dai H. Lewis, manager of Buffalo's successful exhibitions, has been engaged to conduct the show.

SCORE OF CARS ON RUN TO BOSTON.

NEW YORK, March 11.—In a mid-winter endurance contest, on a running schedule of twenty miles an hour, twenty-one automobiles early this morning left Columbus Circle on their way to the Hub, in competition for the Chester I. Campbell trophy, expecting to finish shortly after 6 o'clock this evening at Mechanics' Hall, where Boston's annual show is in progress. As "The Automobile" goes to press the cars are well on their way, traveling over muddy but fairly good roads.

Under the direction of Mills and Moore, this contest was gotten up almost upon the spur of the moment, but it shows that makers, dealers and owners alike, appreciate a contest at this time of the year when such an event is a diversion from the regular round of exhibitions. At 6:30 this morning the first machine, a Mora, driven by W. W. Burke, was sent away on the run of about 243 miles, making it due at the finish at 6:39, and

Campbell Cup Offered in New York to Boston Run.

the others followed at one minute intervals. The rules called for an average speed of the legal limit in this State and Massachusetts, with the same through Connecticut, several checking stations being chosen on the route, where the cars were due to arrive on their schedule or be penalized one minute for each minute late.

New Haven was selected as the first station, the first car being due at the New Haven House at 10:30; the second at the Hotel Heublein, in Hartford, at 12:36; the third at the Worcester Automobile Clubhouse, in Worcester, at 4:33, and then to the finish. From Worcester R. H. Johnston, of the White Company, has arranged to pilot the cars into Boston, the remainder of the journey being comparatively easy to follow. The roads have been covered with mud and slush for several days and a hard test was expected when the contestants left this city.

The trophy was first competed for two years ago and was won by L. H. Perlman, who has returned it to Mr. Campbell in order that it may be the prize again this year and perhaps on following occasions. The referee, Leon M. Bradley, of the A. M. C. M. A., has stated that the trophy will be awarded to one contestant, and if there is a tie to-day he has reserved the right to send the cars either back over the same route or on some other one until a definite winner is evolved. The following is the list of entrants, in the order of their start:

No.	Car.	Entrant.
1	Mora	W. W. Burke
2	Renault	Paul Lacroix
3	Haynes	W. E. Shuttleworth
4	Acme	A. B. Cordner
5	Matheson	A. D. Hall
6	Franklin	C. S. Carris
7	Kissel Kar	F. S. Dickinson
8	Stearns	Guy Vaughn
9	National	W. C. Poertner
10	Knox	Albert Dennison
11	Zust	V. P. Pisani
12	Premier	R. R. McNamara
13	Atlas	Chas. H. Beecher
14	Stearns	M. W. Batts
15	Matheson	C. F. Rothfuss
16	Cadillac	L. R. Burne
17	Cleveland	J. I. Miller
18	Cadillac	H. A. Street
19	Lozier	C. E. Force
20	Maxwell	C. W. Kelsey
21	Coates-Goshen	A. MacRae

DAYTONA RACES WILL BE HELD.

After encountering many obstacles, which for a time made it look as if there would be no races this year upon the Florida beach, affairs have been finally arranged so that the contests at Daytona will be run off as scheduled, from March 23 to 26, and additional entries have been made. Of these there are a number of large powerful cars which have participated in many events in this country and should enliven matters in the sunny South, among them being the Fiat Cyclone with Ralph DePalma at the wheel, Lewis Strang with a special Buick, and H. J. Kilpatrick with the big reconstructed Hotchkiss.

The Fiat will defend its title to the Minneapolis trophy, won by the late Cedrino, and will be entered in every event eligible. Burman is already at Daytona with Buick cars and Strang is due to join him very shortly. It is highly probable that the two Knox cars will be contenders. Kilpatrick has rebuilt the Hotchkiss, the one which was formerly owned by E. R. Thomas, and changed its color from the yellow that became so well known to a bright red. The aeroplane race is also looking up well, a number of entries have been received, and the machines are on their way to the scene of action.

The Contest Board of the American Automobile Association yesterday granted a sanction for the races, thus closing an incident that for a time appeared to be one which might cause considerable trouble. Although there will be foreign cars competing, the event is considered to be a national one, and therefore the A. A. A. was asked for the sanction. W. J. Morgan, who has this year's races in charge, is actively engaged in the work.

NEW APPLICANT FOR BRIARCLIFF.

NEW YORK, March 9.—Automobile racing circles about this city were very much surprised, and a new puzzle added to those encompassing Briarcliff race affairs, to-day when an application was made to the Board of Supervisors of Suffolk County, Long Island, for permission to hold on certain roads a race similar to the one for the Briarcliff trophy, and in some cases said to be that event itself. The application was made by L. C. Austin, and a 60-mile course suggested, with Riverhead, Quogue, Patchogue, Huntingdon and other points, upon it.

Neither Henry H. Law, son of the donor of the trophy, Walter W. Law, and a member of the contest committee of the A. C. A., nor Percy Owen, chairman of the Briarcliff race committee, knew anything about the affair, and inasmuch as it is now up to Mr. Law to determine upon the course, rules and other matters in connection with that contest, it is not thought that he Suffolk County promoters would be able to secure the Briarcliff trophy. That, of course, would not prevent them from holding a race and donating a new prize.

What Some New England Makers Are Doing

SPRINGFIELD, MASS., March 8.—Present prosperity and preparation for one of the greatest, if not the greatest automobile selling season ever known in this country, is the line along which automobile manufacturers in the vicinity and in Hartford are working, making great numbers of cars for delivery when the real Spring opens and the demand becomes greater than the supply, machining great amounts of materials, and not in the least showing any fear of more financial trouble, the tariff question or of anything, except a shortage of new automobiles when dealers want them most for delivery to pressing customers.

Both the Knox Automobile Company, in this city, and the Stevens-Duryea Company, at Chicopee Falls, are working to the limit in order to fill orders which are coming in now, in a procession that has been surprising, while the Fisk Rubber Company, also at Chicopee Falls, has almost as much work as it can do in making enough tires. At Hartford, a center of the automobile industry, the story is the same, the Pope Manufacturing Company, now reorganized and out of the receivers' hands for nearly three months, not only working its big factory as fast as possible, but at night as well as day. The Electric Vehicle Company, making the Columbia cars, will be out of its difficulties within a couple of months and already many of the plans for the reorganization are well under way. The McCue Company is just waiting for the completion of its new factory and the Hartford Rubber Works is finding overtime work necessary.

Probably one feature of a trip through these factories is the enormous amount of raw material, castings, forgings and other parts, that are being machined preparatory to being used in construction, the rows of cars that have been made during the winter for Spring delivery in some places, and the general hum of industrious application to the coming problem, that of constructing enough high grade automobiles to satisfy the consumer, and there are no second-hand or slightly used cars being returned to the factories, either, for repairs or the scrap piles.

Many Cars in Stevens-Duryea Factory.

Four hundred automobiles represents a great amount of money, time and labor, but that is the number which the Stevens-Duryea Company has in its big factory at Chicopee Falls, being machined, assembled, painted, tested, or finished awaiting delivery. Between 1,200 and 1,300 four and six-cylinder touring cars and roadsters, with a few enclosed cars included, will be the output for the year, and at present the shipping rate is averaging 41 cars a week, so that with a productive capacity of 50, the concern can put away a few machines to meet the demand that will prevail in May, June and July. But to see 100 beautifully finished touring cars covered with dust cloths, complete with the exceptions of tires, standing on the storeroom floor, a hundred assembled motors nearby and then other cars by the score in the various departments in the stages of their development, is enough to impress the casual visitor with the immensity of the industry.

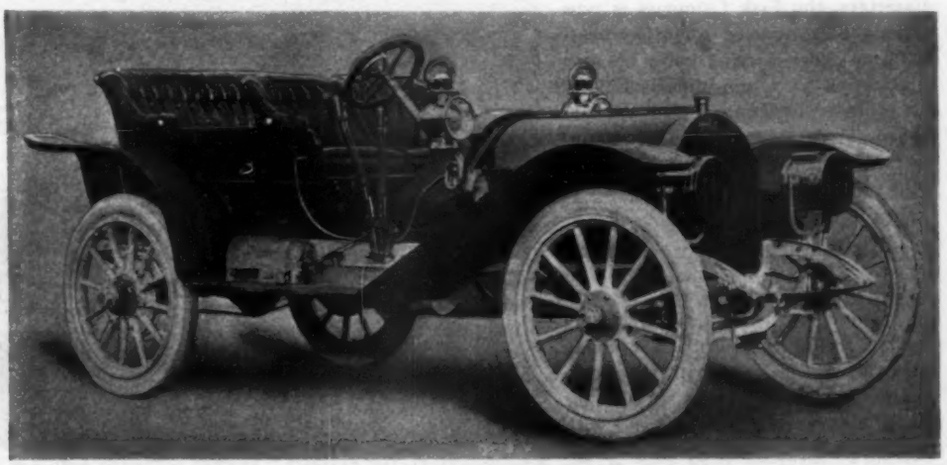
This is perhaps the feature of the prosperous condition at the Stevens-Duryea plant. In starting through in the same direction as the raw material takes from the time it enters as rough stuff until it is in the finished car, the whole aspect of the factory, extending over 300,000 square feet of floor space, is that of activity. On Friday of last week there were hundreds of cylinder castings on big trucks going from machine to machine, showing that the large number of finished cars to be shipped is but a part of the entire production, scores of transmission sets, clutches, crankcases and rear constructions, being around also, in various stages of development into parts of the cars. In the paint shop there were fifty running gears, by actual count, having the rough and finer coats placed upon them, in the finishing department there were twenty cars having the finishing touches worked up, the stripes put on them and in other ways completing them for the purchaser. Another twenty chassis were in the process of erection in the room set aside for that work, and in the assembly room there were at least twenty-five completed rear constructions, and fully 100 motor-clutch-transmission sets, all being in a unit aluminum housing, ready for lifting into the pressed steel frames standing nearby. So altogether 400 cars are in the factory, some, of course, just being started.

Yet in spite of the large number of finished cars, the great amount of work going through the factory and the building of half a hundred machines a week, the factory can give immediate delivery only upon its four cylinder models, the demand for six cylinder ones being equal to the supply. Just about an even thousand employees are engaged in the work of the Stevens-Duryea Company, and in the erecting room the men are doing evening work. A new building is being constructed to serve as a storeroom with a capacity of 70 machines.

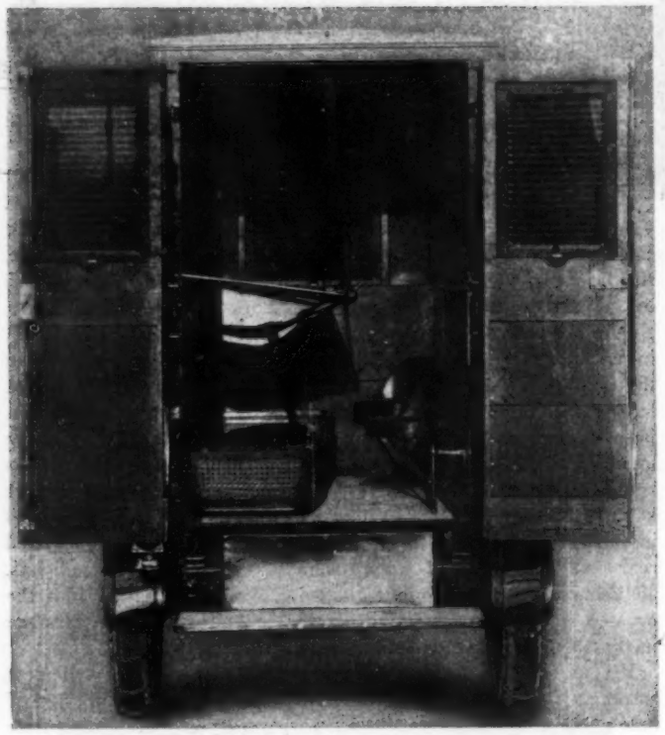
Of great interest, too, is the testing department, one of the most thorough of any automobile concern, all of the new motors being run from two to three days upon testing stands with their own carbureters and magnetos, attached to electric dynamos which accurately show the amount of power being developed. Seventeen stands are provided so that many can be tested at once. The new engines are first "run in" and limbered up by the electric motors, and then the tables are turned, so to speak, and the automobile engines, both fours and sixes, are operated under their own power, driving the electric motors as dynamos and registering the amount of power developed. When they have passed inspection, and run quietly, they are installed in their chassis and given a test upon the road from 50 to 100 miles.

Fisk Makes Four Hundred Tires Daily.

Nearby, along the canals that furnish water power, is the plant of the Fisk Rubber Company, where 400 pneumatic shoes and 600 tubes are being made daily, and more to the point, are being



Four-Cylinder Stevens-Duryea Equipped with Toy Tonneau.



Interior View of the Improved Knox Ambulance.

shipped away to supply orders, or to give the branches, agencies, or factories a stock for use when needed. The Fisk feature for some years has been the bolted on type of tire and with the new removable rim, lately introduced, the demand for this has surprisingly increased, according to the officials of the company. The bolted-on tire, fitted to the new rim combines the features of a mechanically fastened shoe with that of the quick detachable or demountable, and the increased demand for this combination has been remarkable. At present the principal business is with manufacturers who are equiping their new machines, and the amount transacted last month was double that done during February, 1908. In taxicab circles the Fisk has shown such success that the firm has received orders for this equipment from many cities, among them being Philadelphia, where the Bergdoll cabs have recently put them on. Thirty tires were shipped last week for taxicabs on the Pacific coast, and, in fact, there has been a great deal of business done through the South and West, the regular centers, such as New York and Boston, doing about the usual amount, the growth apparently being farther away from the home town.

In line with the trend toward larger diameters, the Fisk Company is now making fifty tires of 40 inches by 6, to fill an order, a remarkably big tire when it is seen in comparison with the more generally used sizes. There is a decided movement among manufacturers from small size to larger wheels, especially those from 36 to 42 inches in diameter.

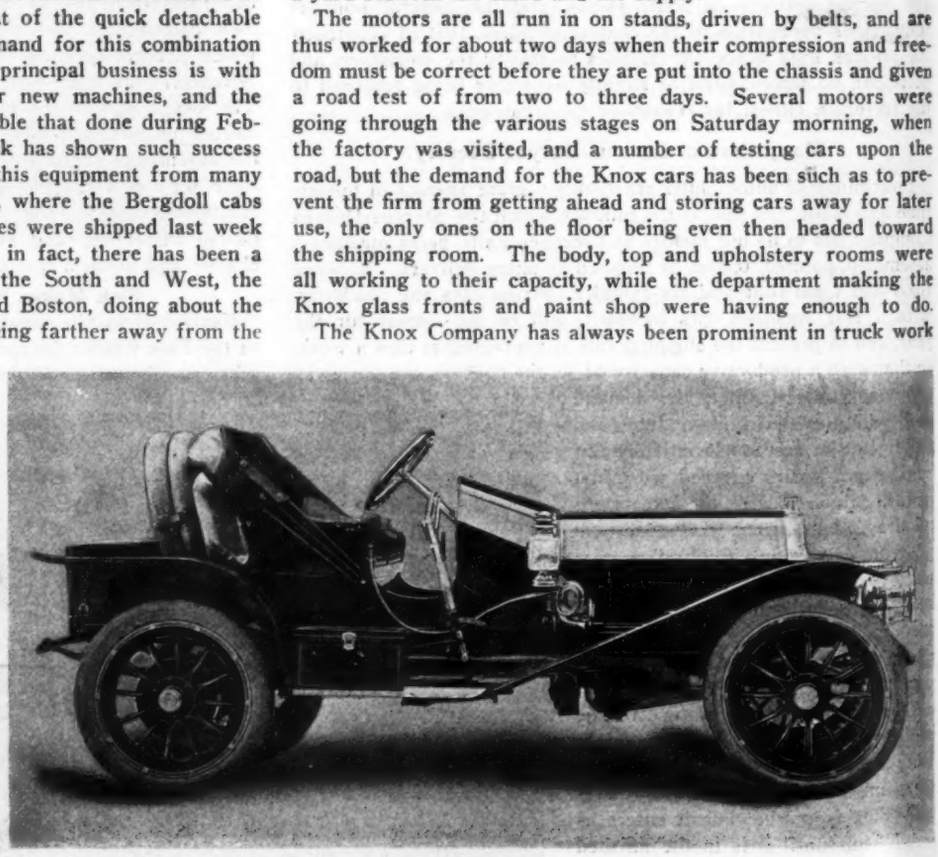
Busy Times for Knox Makers.

At the plant of the Knox Automobile Company, in this city, there is a similar scene of activity, everybody busy turning out cars, both for pleasure and business purposes, with either air or water-cooled motors, and with enough raw material going through to show the large business that will be done during the season. It takes some time to machine 300 cylinder castings, enough for 75 complete cars, and to finish these cars; and the fact that there were fully that many castings sitting in the machine shop was conclusive evidence of the plans for a whole lot of work and a big product. About 600 machines are to be put out this season, and, of course, a large number have been delivered already, a few are awaiting delivery, and a large amount of material is being constructed for the ones to come. Of the total number of pleasure cars, about 500 will be the Model O, with its 38-horsepower motor, and the other 100 will be the Model M car with a 48 horsepower motor. The trucks and commercial machines are built to order so that it is difficult to estimate at any time just how many will be built during a season.

Increased business has necessitated increase of space and now the company has 216,700 square feet, building all its own bodies, making its own aluminum and bronze castings, and doing all of its own upholstering and top building, besides the regular work of making the greater part of its cars right in the factory, very few finished parts being bought outside. A walk through the machine shop was sufficient to show the trend, for in addition to the 300 cylinders already mentioned, there were rows upon rows of pistons, ready to be machined or already finished, piles of connecting rods, bearings and small parts, galleries of crank shafts, and scores of big aluminum castings that combine the crankcase and transmission case in one. After the machine shop, located, in a room nearly 400 feet long, is through with the various parts they are sent to the stock room and out of it, in turn, to the assemblying floor in trucks, each of which carries the parts necessary for one car. This is a feature which struck one as being good and not often seen, that of taking from the stock room the four cylinders, the clutch, the valves, springs, gears, wires, spark plugs, balls, pumps, crankshaft, pistons, connecting rods and the other various parts, and putting them into separate box trucks so that each motor can be put together without there being any need for the mechanics to walk more than a yard between the stand and the supply.

The motors are all run in on stands, driven by belts, and are thus worked for about two days when their compression and freedom must be correct before they are put into the chassis and given a road test of from two to three days. Several motors were going through the various stages on Saturday morning, when the factory was visited, and a number of testing cars upon the road, but the demand for the Knox cars has been such as to prevent the firm from getting ahead and storing cars away for later use, the only ones on the floor being even then headed toward the shipping room. The body, top and upholstery rooms were all working to their capacity, while the department making the Knox glass fronts and paint shop were having enough to do.

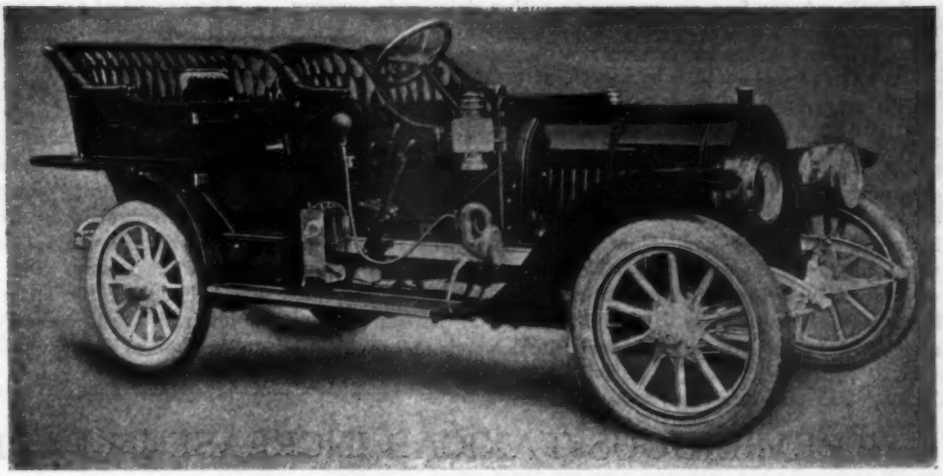
The Knox Company has always been prominent in truck work



New Body Type on Knox 38-Horsepower Chassis.

and its list of orders shows that the commercial situation is improving, there being a steadily growing demand for cars of this class. All types are supplied, from those with a capacity of 1,000 pounds to those which can carry eight tons, with motors from the single cylinder to a four or six, many of them either water or air cooled, for any use from an ambulance to a fire engine, and the big truck, that has a motor gear-driven pump at the rear, for the Boston show was receiving final touches. The fire equipment has been given especial attention and a number have been shipped recently.

The Knox Company will stick to contests this year as it has done in the past, entering hill climbs, speed contests on tracks and roads, endurance runs and practically everything that comes along. It has just received the award of $1,000 for the winner of the Garden City Sweepstakes, on the Motor Parkway last fall, the Sharp-Arrow being disqualified.



Latest Type of Pope-Hartford—A Seven-Passenger Touring Car.

What the Hartford Factories Are Doing.

HARTFORD, CONN., March 8.—Dropping down the Connecticut Valley to this State's beautiful capital, the same note of optimism was found in the offices of its several automobile manufacturing concerns, the orders coming in a highly satisfactory manner, trade difficulties having been overcome and the only apparent purpose being to turn out cars, as fast as compatible with high quality.

The Pope Manufacturing Company, building the Pope-Hartford cars, is the largest of the concerns in the automobile business in this city, and although making 700 machines this year the capacity will be the limit in 1910. Only about three months ago this concern came out from the hands of receivers, and its policy for this season was to a large degree outlined then, following a reasonably conservative policy. Even now there are 1,100 men employed in the big factory, one of the largest of its kind in the country, with 400,000 square feet of floor space, and evening work was announced to commence again this evening. It has been found that evening work can be gotten from the employees for a certain length of time without making them too tired the following day, or necessitating an extra shift, but then that must be stopped and the men given a rest.

An enjoyable trip can be made through this plant, to one interested in automobile affairs, for there is perhaps no concern in this line of work which makes more of its finished cars in its own factory than the Pope company does at Hartford. Its crankshafts, connecting rods, steering knuckles and other parts are drop forged in its forge shop, its radiators are made in its sheet metal department, all the castings are machined in its extensive shops and the bodies are built in still another department. The raw material can easily be followed from the sheds in the yards through the various operations of machining and fitting, to the assembling room where it goes into the cars. That there is plenty of work to do to keep the factory running full time, even if the notices of evening work were not seen, would be evident from the amount of unfinished castings seen throughout the plant, and finished ones ready to be put together are in the extensive stock rooms occupying two large fire-proof floors.

The Pope-Hartford is enjoying another year of popularity, judging from the tone of the officials when speaking of the number of shipments, the increase of incoming orders, the general good feeling existing with the outlook free from any restrictions, and the amount of material authorized sent to the purchasing department. The cylinder and aluminum castings, which are made outside of the factory, are being received in large, frequent shipments and are handled in the machine shops as fast as possible, while those parts which are made right in the plant are going through in like order. The wood frames, which have proven successful in years past, have been retained and these, of course, of second growth hickory, are secured away from the plant but shaped in it. Sheet-metal bodies are used on all of the cars except parts of the enclosed machines, most of which, however, have been delivered, and the upholstering department, top and body department are all doing just as much as they possibly can. Only a few cars have been saved to meet any growth in the demand, but it is hoped that by getting in extra time work, a few may be finished ahead, in order to give dealers immediate deliveries. There are a large number, of course, in the factory in the different stages of finish, some almost ready to be shipped, others in the paint shops, still others in the body department, and many being assembled. Quite a squad has been employed all along in testing out the cars on the roads, after the motors have been run coupled to dynamos to record their power and to run them in, fully a dozen cars being on the road on Saturday.

The extent of the Pope-Hartford machine shops is impressive, for they are entered one after another, floor above floor, long and wide and filled with all kinds of lathes, presses, shapers, milling machines, gear cutters and others for doing special or regular operations in completing the mechanical parts of the machines. The tool shop alone, for making special tools or for keeping those in use in order, is nearly as large as the complete machine shops of some smaller factories.

Receivers Soon to Leave Electric Vehicle Company.

Further up Capital avenue is the plant of the Electric Vehicle Company, makers of the Columbia cars, soon to be free from the receivers and able to pursue a more aggressive policy than it has done for some time, according to Henry C. Knuckols, one of the receivers. In about two months' time the receivership will be dissolved and the reorganization completed. At the present time, however, it is pursuing a plan of building 400 gasoline cars and 100 electrics, on an average of 12 to 15 cars a week, with 500 employees working full time. Of course, as soon as the concern is out of the receivers' hands it will start to build more cars for the 1910 season, and already material for the new product is being arranged, the details having been worked out, and the new cars with some altogether new features will probably be upon the roads by the middle of April.

One of the attractions at the Madison Square Garden show was the color combination at the Columbia booth, a white and a cream yellow car, each receiving a great deal of attention, and so the question was asked as to whether there has been a demand for fancy colors, especially the lighter ones. From the answer it is evident that there is a desire for such machines, for three white ones have been sold here in Hartford, one in Chicago, two yellow ones in other places and a number of prospective purchasers are contemplating having cars gaily finished. The five-passenger touring car, as is generally the case, is the popular

model, though the four-passenger one with a detachable tonneau is being sold in many sections of the country.

Large Production of Hartford Rubber Works.

Working its big factory 24 hours, and turning out 400 shoes and 600 to 800 pneumatic tubes, 2,200 bicycle tires and 200 solids every day, the Hartford Rubber Works Company is doing an enormous business and one that directly reflects credit upon the automobile industry, for the large number of cars that will be built will require tires, and from the demand in the factories of these goods can be seen the stride being taken by the motor-vehicle builders. Both the pneumatic and solid business has been increased during the early part of this year, and the full day and night work has been required to meet the demand.

The newest of the concerns engaged in the automobile business around this city is the McCue Company, which is building a standard car bearing that name, equipped with a 29-horsepower, four-cylinder motor, a three-forward speed, selective sliding-gear transmission and a full floating rear axle. A four-cylinder motor of 45 horsepower can be supplied at an additional cost. Two types of bodies are supplied, either a five-passenger roadster or a four-passenger roadster. The construction throughout is that followed in generally accepted automobile construction, and at present the company is carrying on its work in a small machine shop while waiting for the completion of its factory, to be finished during the latter part of this month. It is planned to build from 150 to 200 cars this year and to increase that number to the limit of the new plant for the 1910 season.

TREMENDOUS TAXICAB INCREASE IN PARIS AND LONDON

PARIS, March 3.—Paris is cursed with a multiplicity of taxicab fares which the authorities are powerless to remove. In order, however, that the public may no longer remain in ignorance as to why a fixed journey in three different cabs should cost three different prices, the Prefect of the Seine has ordered that on and after April 15 all taxicabs shall carry the price per kilometer marked on the flag at present bearing the word "libre." This price will be the one charged after the initial fare of 15 cents has been paid. The distance to be covered for the minimum initial fare, and which at present varies from 600 meters to 1200 meters, must be indicated on a metal plate carried by the side of the driver. Thus a cab running 900 meters for 15 cents would have this indicated on the side plate. If the following rate were 4 cents per additional 400 meters, the flag would carry the figure corresponding to 10 cents, this being the rate per kilometer. Cabs at present vary so much in power, comfort and fittings that it is impossible to enforce the same rate of payment for all, regardless of equipment.

The number of taxicabs in circulation in Paris at the end of 1908 was officially declared to be 2,923, while the number of horse cabs at the same period was 8,790. Twelve months previously, at the end of 1907, taxicabs numbered 1,465 and horse cabs 9,608. Automobile cabs have thus doubled during the twelve months, while the number of horse cabs shows a serious decrease. The decrease of the horse cabs, however, is not in the same proportion as the increase of the motor cab, for it must be remembered that the latter does at least 30 per cent. more work than the former is able to accomplish.

Though Paris holds the lead with the number of taxicabs in use, it is very closely followed by London, which at the end of 1908 had 2,805 taxicabs in regular service, compared with 723 twelve months previously, and only 96 at the end of the year 1906. The decline of the horse and the increase of the taxicab in the city of London since 1903 is remarkable, as is shown by the following official figures:

	Horse Cabs.	Motor Cabs.
1903	11,404	1
1904	11,057	2
1905	10,931	19
1906	10,492	96
1907	9,818	723
1908	8,475	2,805

As in New York, the use of the taximeter as a recording instrument was unknown until the automobile cab made its appearance. This doubtless accounts for the sudden jump into favor, the London public appreciating a system which made payment a matter of clockwork. In Paris, on the other hand, the taximeter was an established institution long before automobile cabs made their appearance, and when these latter did appear they had to compete against a low rate of fares applied with mechanical accuracy to horse-drawn vehicles.

The number of motor omnibuses in use in London at the end of last year was officially declared to be 1,133, this being a slight decrease on the number in service twelve months previously. The comparative figures, as given in the official returns, are as follows:

	Horse 'Buses.	Motor 'Buses.
1903	3,623	13
1904	3,551	31
1905	3,484	241
1906	2,964	783
1907	2,557	1,205
1908	2,155	1,133

The number of motor 'buses in service in Paris at the end of 1908 was 162. The company responsible for the service in the French capital holds a monopoly, but is under an obligation to replace all horse 'buses by automobile vehicles during the year 1910.

AGRICULTURAL MOTOR COMMISSION FORMED.

PARIS, March 4.—A new commission has been added to the half dozen of which the Automobile Club of France is practically composed, the new body to be known as the Agricultural Commission. Its object will be to encourage the application of the automobile and internal combustion motors to agriculture, this being a field of activity that has hitherto been much neglected in France. In view of the possibilities of usefulness in the matter of agriculture, it has already been decided to hold an exhibition and practical tests annually for the next four years, the district chosen being a different one each year, in order to diffuse knowledge on this subject and arouse interest all over the country. The acquisition of a field for experimental work with motor-driven agricultural machines has already been decided upon, the field to be of such a nature that it can also be employed for aeronautical experiments.

FRENCH COMMERCIAL TESTS OCT. 15-NOV. 15.

PARIS, March 4.—The next commercial vehicle competition of the Automobile Club of France will be held from October 15 to November 15 of the present year, the center to be at some point in the suburbs of Paris, and the route to consist of circular trips from this center. Special importance is attached to the competition from the fact that it will be held under the auspices of the War Department, and partly under their regulations, the Army having decided to offer a substantial indemnity to all commercial vehicles conforming to the successful type evolved from the competition, on condition that the automobiles shall be at their disposition in time of war. As army officers will in all cases be responsible for the control, there will be much more rigorous treatment than usual in tests of this nature.

There have been a number of makers in this country who have desired this very important test.

SAFETY AND UTILITY OF AUTOMOBILE STEERING SYSTEMS

PART I

RAILWAY equipment does not have to be provided with steering gear, for the reason that the wheels are flanged in such a way that they will not run off of the steel rails over which they are designed to roll. Horse-drawn vehicles are not provided with steering gear in view of the manner in which the horses draw the vehicles along, thus making it necessary to guide the horses instead of the vehicles. In automobiles, however, the principle is different; they are propelled, not drawn, nor do they roll over guiding rails; hence they have to be steered.

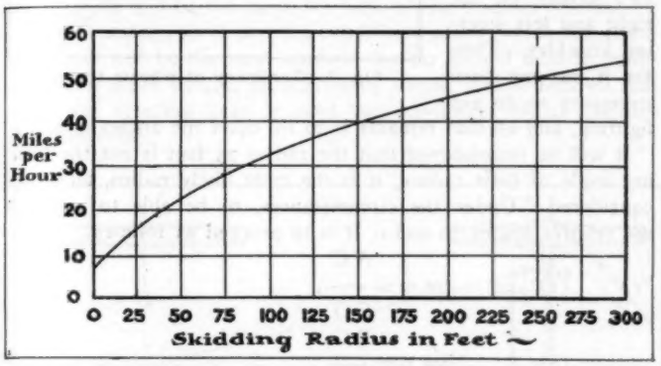


Fig. 1.—Showing relation of speed of cars to skidding radius.

According to Newton's "first law of motion," even automobiles would not have to be steered on a hard level roadway were the automobiles of a harmonious design, and provided they were always to travel in a straight line, for the law says: "If a body be at rest, it will remain at rest; or, if in motion, it will move uniformly in a straight line till acted on by some force. That the secondary force must not be parallel to, and in the same direction, as the force which impels the car, is true.

But one of the advantages of the automobile is that due to its mobility in all directions despite the law, which urges it forward in a straight line. On the other hand, the ability to direct a car out of a straight line does not defeat the tendency of the same to hold to a tangent, and it is for this reason that it is dangerous to overstep the bounds beyond the ability of the devices available to control.

Stable conditions are present in a car when it is traveling in a straight line. Instability begins with the first turn of the steering wheel and increases as the angle of the road wheels is increased, which instability is also augmented as the speed is increased. That some cars will perform better than others, in this respect, is assured, if only it is true that all cars are not with the same center of gravity and in general harmony.

The first serious sign of instability, when a car is diverted out of its habitual straight course, is when the skidding tendency is noticeable. Fig. 1 depicts the situation under good average conditions, in that it shows the relation between speed of the car, in any given case, in miles per hour, and the radius of the arc of a circle through which it can be directed, within which, skidding will not take place on a hard, level road, in the absence of accidental outside influences.

In the curve, Fig. 1, absassa represent speed in miles per hour, and the ordinates are given values in feet, representing radius of turning, under conditions of eminent instability, as indicated by skidding. If a car is traveling at 40 miles per hour, the curve shows that the intersection with the ordinate representing the skidding radius will be at 150. In a word, then, if a car is traveling at a speed of 40 miles per hour, skidding will ensue if the radius of turning is 150 feet.

In actual practice, considering streets of the average width, Fig. 2 shows the usual performance, in turning corners, and the radius of the arc of the circle is given as 75 feet. In this case the curve, Fig. 1, indicates that skidding will take place at about 38 miles per hour of the car. The manner in which the corner is turned, as shown in Fig. 2, is not looked upon as good practice by many autoists, and Fig. 3 is offered to illustrate the proper way to go around corners, according to some authorities. In this case the autoist is supposed to keep to the right, and in so doing the radius of the arc described in turning will be about one-half of that which will be due to cutting the "incurb," as represented in Fig. 2.

To go around corners in the manner as shown in Fig. 3, it is necessary to slow down, for the reason that the radius of turning will be less, and, as the curve Fig. 1 tells, skidding will follow if the speed is 18 miles per hour, assuming the radius is 37 1-2 feet. Likewise, for every speed of any automobile there is a maximum rate at which the turn can be made without skidding, and safety demands that skidding be avoided. Skill in driving consists in knowing and maintaining safe speed, taking into account (a) the fundamental laws and their effects, (b) the road condition, which introduces "accidental" variations, tending to distort normal performance.

Front Wheels Must be Set Properly.—Makers of automobiles, if they have in mind the best results, take into account the manner in which turns have to be made in order to avoid skidding on the one hand, and undue tire depreciation on the other. This is not to say that makers of cars can do anything about the skidding question if the speed is higher than the law allows for a given radius of curvature, in view of the effect of centrifugal force, as previously stated. What the makers can do is to avoid certain tendencies, within limits.

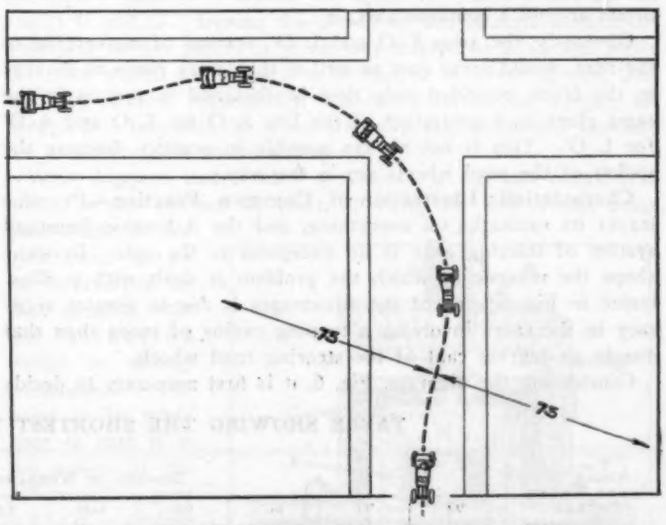


Fig. 2.—Corner clipping orbit of the average driver.

Ackerman, in the eighteenth century, discovered that a vehicle, on a curve, to perform properly, had to be provided with such tierods for the front wheels as would enable them, respectively, to roll on independent orbits, not to a common radius, but from a common axis. Fig. 4 is offered to illustrate the point

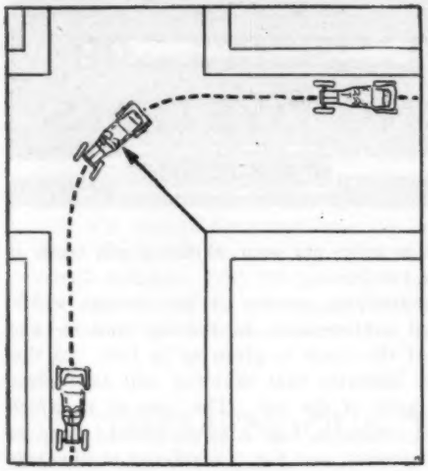


Fig. 3.—In legal driving keep to the right.

to be made, in which it is shown that true rolling motion of all the wheels will be realized when the car is going straight ahead. When the wheels are canted, as in negotiating a curve, if the tierod arms are parallel, since they are connected by a rigid tierod in practice, the radius O A will be the inner wheel radius C C', of turning, but the outer wheel will cant to the same angle, and the arc S S' will be described, which arc is not parallel to the arc C C', and the wheels will not roll perfectly; in fact, the outer wheel will drag.

But if the dragrod arms are to the rear of the axle and converging, in the manner as will be presently shown, it is then that the two front wheels will roll on parallel orbits to a common center, O, Fig. 4, and the inner wheel will have a radius O A, while the outer wheel will have a radius of turning O B. As the figure shows, the arc R R' is parallel to the arc of the circle C C', under which conditions the wheels will perform their functions without dragging, and the tires will avoid damage in the process, because parallelism will be maintained.

Ackerman-Jeantaud System of Steering.—This definite advance over the original idea of Ackerman is illustrated in Fig. 5, in which the arms O L and O' L of the tierod L L converge to the rear, and are parallel to, and cut by, the line A L O on the right side, and A L O' on the left side. The point A is at the center of the rear axle. In turning, the point A moves out on the rear axle plane to the point A', with the result that the turning radius of the car becomes that of the radius A' O' for the inner wheel, and the radius of turning of the outer wheel becomes A' O, so that the two canting wheels turn on parallel orbits around a common axis, A'.

Obviously, the arms L O and L O', instead of converging to the rear, would serve just as well if they were made to diverge to the front, provided only they be designed to remain in the same plane as a projection of the line A O for L O and A O' for L O'. This is not always possible in practice, because the spokes of the road wheels are in the way.

Characteristic Illustration of Common Practice.—Practice leaves its earmarks on everything, and the Ackerman-Jeantaud system of steering gear is no exception to the rule. In some shops the manner in which the problem is dealt with is illustrated in Fig. 6; one of the advantages is due to greater accuracy in the cases involving a turning radius of more than that due to 30 degrees cant of the steering road wheels.

Considering the diagram, Fig. 6, it is first necessary to decide upon the governing conditions in practice. If it is true that the average turning radius is, say, 75 feet, as given in Fig. 2, this is the distance to use in the diagram Fig. 6 as the value of O A. The distance b equals the wheelbase of the car, and a is equal to the distance between the two pivots of the right and left steering knuckles. Thus far it has not been necessary to do any figuring, and all that remains is to fix upon the angles m and n.

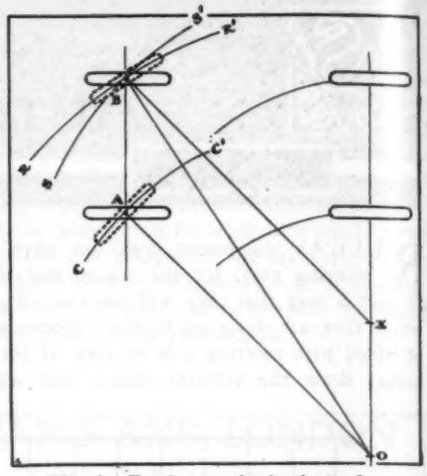


Fig. 4.—Tendency of wheels to drag.

It will be remembered that the radius 75 feet is not the turning angle of least radius; it is the most likely radius, all things considered. Under the circumstances, to be able to establish the relative angles, m and n, it is to proceed as follows:

$$(1)\ldots\ldots\cot m = \frac{AC}{CO};$$

$$(2)\ldots\ldots\cot n = \frac{BC}{CO};$$

$$(3)\ldots\ldots\cot n - \cot m = \frac{a}{b} = \frac{BC - AC}{CO};$$

$$(4)\ldots\ldots\cot n = \cot m + \frac{a}{b}.$$

Tabular Values Save Calculations.—While it is always desirable to know the method by which results are arrived at, it is important to see things as in a "bid's-eye view," in order to realize something of the relative advantages. Then, it is to avoid mistakes if tabulations are made, since they can be done on a leisure basis and mistakes can be discovered and corrected. With these advantages in the mind's eye, the tabulation here offered takes into account the several likely canting angles of the steering road wheels of automobiles, and the effect of the length of wheelbase may be seen at a glance.

As an illustration of the use of the table, it will be enough to call attention to a car with a 100-inch wheelbase, which shows beneath a 15-foot turning radius if the wheels are canted 45 degrees from the center. In like manner it will be possible to fix upon the turning radius, in feet, for all cars up to 116 (inclusive) wheelbase for all canting angles between 34 and 46 degrees from the center.

Importance of the Equalization of Power.—While it is true that the question of steering is ordinarily regarded as a simple operation, in which guiding the car is the main feature,

TABLE SHOWING THE SHORTEST TURNING RADIUS OF AUTOMOBILES.

Angle of Inner Wheel Degree	Length of Wheelbase in Inches and Turning Radius in Feet												
	92	94	96	98	100	102	104	106	108	110	112	114	116
35	17	17	18	18	18	18.5	19	19	19	20	20	20	20
36	17	17	17.5	18	18	18	18.5	19	19	19	19	19	20
37	16.5	17	17	17	17.5	18	18	18	18.5	19	19	19.5	20
38	16	16.5	17	17	17	17.5	18	18	18	18.5	19	19	19
39	16	16	16	16.5	16.5	17	17	17	18	18	18.5	19	19
40	15	16	16	16	16.5	16.5	17	17	17.5	18	18	18	18
41	15	15.5	16	16	16.5	16.5	17	17	17	17.5	18	18	18
42	15	15	15.5	16	16	16	16.5	16.5	17	17	17.5	18	18
43	15	15	15.5	15.5	16	16	16	16.5	16.5	17	17	17	18
44	15	15	15	15	15.5	16	16	16	16	16.5	17	17	17
45	14.3	14.5	15	15	15	15.5	16	16	16	16	16.5	17	17

Note.—The distances in feet in the body of the table are given in the nearest (above) feet, and fractions of feet, on the ground that further accuracy would be uncalled for.

it is nevertheless useless to go through the process unless the car will mind the helm, so to speak. The steering wheel is almost the least device to be given consideration in the process.

The power is delivered to the traction wheels, usually the rear wheels of the car, and since the two traction wheels do not always travel at the same speed, some means must be provided by which the power can be equalized. If the power is not equalized, it is then that skidding will be likely, since the ability of each of the wheels is limited, and each must do its share.

But the share of work that must fall to each traction wheel is a variable depending upon the road conditions, speed of the car, curvature of the road, centrifugal force, and all the other tendencies such as will cause the traction wheels to press more or less. If the load is equal on both wheels, and if the road is of the same texture under them respectively, then, if the car is on the "straight ahead," it is a fair inference that the power requirement will be the same for both of the traction wheels.

Unfortunately, there are the conditions under which the steering wheel will be the least needed; the car should tend to maintain its straight course, as previously stated, and it follows that when the steering gear is used the conditions of its use are quite different.

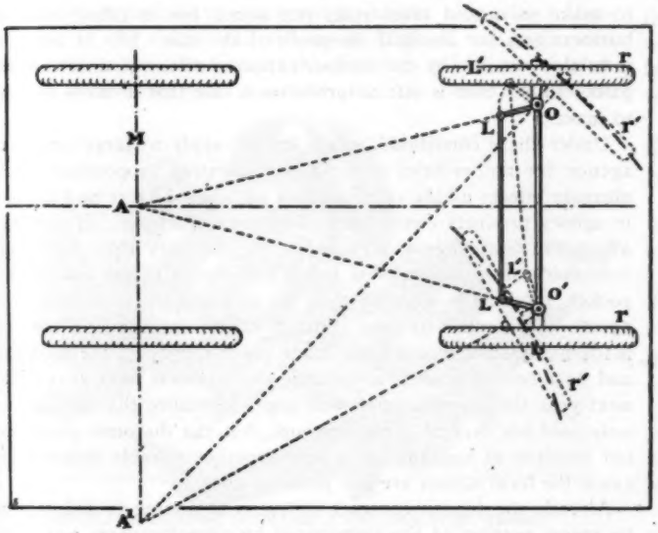


Fig. 5.—Characteristic Ackerman-Jentaud steering layout.

In order to be able to deliver the power in proportion to the respective abilities of the two traction wheels, it is the custom to use compensation gearsets (differential gears), which may be of divers designs, as square-cut or bevel types of gears. At all events, the purpose of the "differential" is to correct the evil tendencies, and, in a large measure at any rate, the use of the "differential" results in the equalization of the delivery of power to the respective traction wheels, thus aiding in the steering process, since skidding is aborted.

The complex nature of the "differential," and the curiosity it arouses in the haunts of owners of automobiles, demands an explanation of its peculiar action, at this time, on the ground that it is of great importance in connection with the steering operation, since it assures that a car will respond to the will of the operator as expressed by the steering wheel. Fig. 7 shows the arrangement of a bevel type of differential gear, in which A represents the bevel pinion which, in conjunction with its mate B, transmits the power of the motor to the differential housing C. Tracing the transmission further in its migration, it is to note that the spider D D serves as the means and the axis of rotation of the "satellites" E and E', through which the distribution is made to the gears F and F', which, in turn, are keyed to the differential shafts G and G', which shafts are in rigid relation to the traction road wheels.

The one remaining question is, How does the differential perform the distribution in delivering power to the respective traction wheels in proportion to their respective needs? Considering the source of torque to be the motor, which causes rotation of the pinion A, it is self-evident that this pinion, since it meshes with the gearwheel B, will compel rotation, and the direction will be as shown by the arrows, thus assuring that the housing of the differential gears will rotate in response to the motor, and to this extent there is no differential action whatsoever.

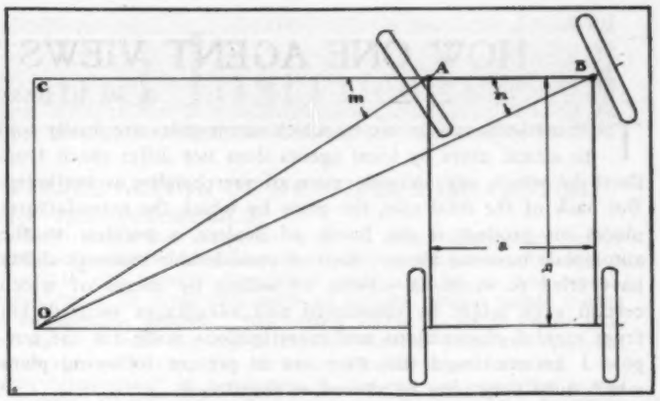


Fig. 6.—Practical method of laying out steering linkages.

Since the satellites E and E' are free to rotate on the spindles of the spider D D, and considering that the spider D D is free to rotate on the bearing over the shafts G G', the satellites are free to respond to the tendencies in the manner as follows: (a) When the car is on a straightaway, the satellites merely serve as a balancing arm, weighing out to the planets F and F', equal increments of torque, and both road wheels rotate at a common speed, during which period the satellite pinions do not rotate, with their spider, around G G', nor will the same satellite pinions E E' rotate on their own bearings on the spindles of the spider D D. The whole housing rotates instead. (b) But if the car is negotiating a curve, it is then that the differential will have a function to perform, since the road wheel, on the inside, will make a less number of revolutions than the remaining road wheel. The result is that the speeds of the planets F and F' will not be the same, and during this time compensation will be due to rotation of the satellite pinions E and E', not only on the spider spindles D D, but the spider will also rotate on the shafts G and G'. During the period of this relative motion the ability to deliver power is in no way interfered with, and while the road wheels are enabled to revolve at different speeds, they are also driven, respectively, without cessation of torque, although it is true that the wheel traveling the fastest will measure the greatest result in horsepower.

What happens under other conditions, as on bad roads, is a matter which will not be taken up here, nor will certain other possibilities of the differential gear be interjected, on the ground that the situation would be unduly complicated. The point to be made here is that it is the action of the differential gear which enables cars to roll around curves, delivering power to both wheels without altering the "slip" relation of the wheels.

(To be continued.)

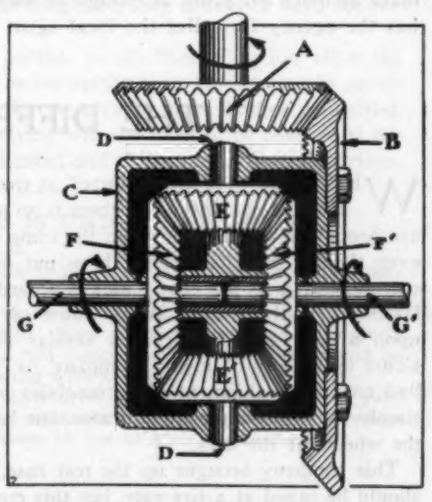


Fig. 7.—Bevel differential gears set.

HOW ONE AGENT VIEWS THE SELLING PROPOSITION

By A. D. HARD, MARSHALL, MINN.

THE methods now in use by which automobiles are finally sold to actual users by local agents does not differ much from those by which any valuable piece of merchandise is marketed. But back of the final sale, the plans by which the manufacturer places his product is the hands of dealers is peculiar to the automobile business alone. Men of considerable business ability have tried to evolve a scheme of selling by means of which certain evils might be eliminated and advantages secured, but from careful observations and investigations made for the purpose I am convinced that they are at present following plans which must very soon be altered or abandoned.

In my investigations I have commenced at the retail end of the selling proposition and worked backward toward the manufacturer. The scope of my observations includes only several small cities in southwestern Minnesota and western South Dakota. The roads in this region of country in their natural condition are favorable for automobile use a greater portion of the year, and the people are above the average in wealth and refinement. They have money with which to buy pleasure, and they get it in automobiles. Outside of physicians and real estate agents, nearly all automobiles are used as luxuries.

A farmer will quit the plow at 3 o'clock, and, getting into his four-cylinder car, come to town to talk politics. The business man of the small towns will get out his touring car after business hours and take his family and friends to the city, thirty miles away, to attend the theater, and the women of the family will use the car as much or more than the men themselves.

The small city of Flandreau, South Dakota, with a population of less than fifteen hundred, has 54 automobiles, and one of them cost $8,000. Madison, a similar sized city, some thirty miles west, has 42; Pipestone, twenty-two miles east, has over 30, and Luverne, a city of about twelve hundred, is the manufacturing home of the Luverne automobile, an assembled two-cylinder car of some pretensions.

The men who sell automobiles as local agents as a rule are much less able to to own an automobile than those who buy for their own use. They cannot keep several cars in stock, therefore they sell from catalogs and demonstrations made by State agents in Sioux Falls or Minneapolis. In many cases the agent who sells the car is not the credited agent of the car that he sells, but by a bargain between him and some agent of that car in some other town nearby he is able to handle the sale and clear 10 per cent. profit. Agents in several nearby cities combined to accept one agency on the deposit-contract system, and then divide up the cars to suit themselves. This enables the agent to supply a customer with almost any car that he may prefer and still make as much net profit as though he was selling the car that he has the agency for. But the local agent does not sell many of the cars that come to town. Several men who wish to buy cars will get together and arrange for one of their number to take a deposit-contract agency, and each gets his car at wholesale price. The agency is then not pushed at all, and, as no other agent can be given a contract in that town, no more of that make of cars are sold in that place.

It is a very easy matter for agents in several nearby cities to bunch their orders, and the manufacturer wonders why he is not able to secure a deposit-contract agency and send more cars into that territory. The State agent does not feel the loss, as he puts out all the cars that he has deposits on, and, as the demand at present is about equal to the possible supply, he is satisfied with the big discount which the manufacturer has been compelled to give, in order to get him to handle this system of selling. One reason that agents are combining to evade the restrictions of this deposit-contract system is because the proportion of the 30 per cent which the manufacturer sets off for the middlemen is divided in such a way that the man who works to make sales and takes risks not asked for in other lines of business gets but one-half the profit of the sale. His 15 per cent is further cut into by the various expenses of the business until a paltry 10 per cent is left as profit on a sale that it takes months to make.

Under these conditions, which do not apply to large cities, an agency for automobiles is not a very alluring proposition. The ultimate effects of the combinations of single buyers and trading in agency products comes back to the manufacturer. It does not affect the State agent very much, as the cars that reach any customer comes through his hands and drops 15 per cent in his pocket, no matter whether they go to clubs or to a bunch of agents represented by one contract. The local agent has not made many sales, nor has he made much money in the business, and he loses all interest in pushing the business next year. The next year the manufacturer will begin to realize that he has not only sold his cars at a big discount, but the discount given has not resulted in building up a permanent or reliable demand because the local agents are not pushing sales.

Already the deposit-contract system is beginning to disintegrate by secret evasion of the restrictions by manufacturers and State agents, in order to get ahead of competitors. I have on my desk a letter offering to waive the deposit clause and allow me to get cars for spot cash as wanted, one at a time.

One of the largest manufacturers of automobiles in the United States has just sent one car here to a party at wholesale price for private use on an open agency proposition. Five persons here have formed a club and taken an agency for a well-known car in order to secure the 15 per cent discount on their own private cars.

THE DIFFERENT IMPORT DUTIES ON TIRES

WHEN auto tires are imported as tires in shipments of tires the customs duty upon them is 30 per cent., but when they are brought into this country in the same crate as an automobile, even though they have never been put upon the wheels of the car, the rate is 45 per cent. This is according to a decision made last week in the United States Court of Appeals in New York upon a case appealed from a similar decision by the Circuit Court by the Auto Import Company, of New York City, which had received a shipment of automobiles in which the tires were simply enclosed in the same crates, but had never been fitted to the wheels of the cars.

This company brought up the test case, holding that the tires should be taxed at a tire rate, but this contention was overruled by the court, it being held that automobiles and their tires are entireties. In making this decision, Judges Lacombe and Ward concurred, but Judge Noyes dissented, giving as his opinion that inasmuch as it was problematical as to whether the identical tires which were received in the crate would ever be put upon that car, they should be received at the lower rate, there being an appreciable difference in the case of four expensive shoes and tubes.

As a result of the pending enforcement of the German liability law, at present before the Imperial Diet, every class of persons professionally interested in motor cars have united into one great opposing force, as all regard the measure uncalled for, untimely, ill-advised, and a severe handicap on the industry, which is just again collecting its strength after the universal financial crisis.

Letters Interesting and Instructive

DIRECT ON THIRD AND FOURTH SPEED.

Editor THE AUTOMOBILE:

[1,782.]—(a) I have read about a car in which the transmission gear set is devised for "direct drive" on the third and fourth speed. Please illustrate the idea.

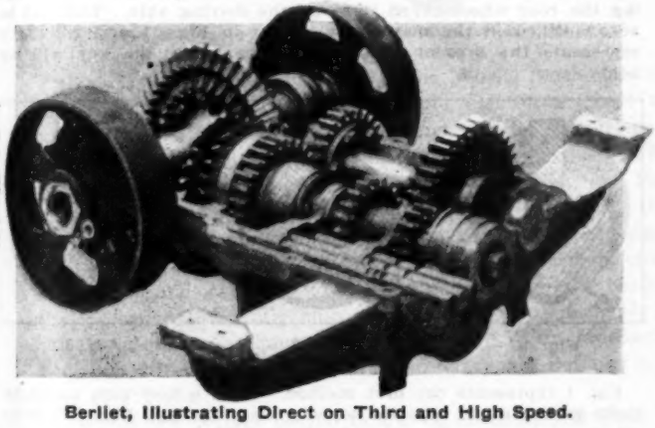
(b) Does the speed of an automobile motor depend upon the sizes of the valves?

(c) Are the articles by Thomas J. Fay to be published in book form, and, if so, when?

Ishpeming, Mich. C. A. S.

(a) The "Berliet" is one of the cars so designed that the transmission gearset is contrived for direct drive on the third and fourth speed. The plan is as shown in the illustration here given. As will be seen, two bevel-gear sets are used, and, since they are sleeved, it is possible to shift the one or the other at will for the purpose.

(b) The speed of a motor will increase as the result of larger valves, more commodious passageways, higher compression, better timing of the valves and the spark. Also if the design can be improved so that the mechanical efficiency will be on a higher level. It is assumed that you mean that the power should increase as well. There are limitations to the increase that can be realized since pre-ignition will follow if the compression is increased beyond a certain point, which might be about 95 pounds per square inch, absolute. Then, it is true that valves will warp if they are too large to withstand the heat changes and the strains which follow.



Berliet, Illustrating Direct on Third and High Speed.

(c) A date cannot be fixed for the issue of the writings of Thos. J. Fay in book form.

RELATION OF GEARS TO TIRES.

Editor THE AUTOMOBILE:

[1,783.]—Will you kindly tell me in "Letters Interesting and Instructive" which type of transmission—planetary or sliding—is the better, from the point of view of endurance, and if the planetary is easier on tires; also, if it is true that speed changing is attended with jerks, if sliding gears are used?

Allentown, Pa. TRANSMISSION.

The planetary has a certain useful range in automobile work, and while this zone, if such it might be called, has been invaded by the sliding gear system, it is true, nevertheless, that the planetary system has held its own. On the other hand, the sliding gear system is of undoubted ability, capable of serving in the most exacting work, and it is highly improbable that any concrete comparison between the two types of transmissions will be of any value. From the tire point of view the more speed changes there are the better. But the planetary furnishes the equivalent of speed changes in starting a car, since the bands can be slipped.

FIERCE ACTION OF MULTIPLE DISC CLUTCH.

Editor THE AUTOMOBILE:

[1,784.]—Please tell me what to do to stop "chattering" in my multiple-disc clutch, when the car is starting from rest. The clutch appears to slip harshly, through a small arc, let go, and repeat, several times, in rapid succession at certain critical points during the engagement process. The clutch seems to be of ample proportions as it does not slip in regular running when the lubricant used is not too thick. The thrust bearing is in good shape.

This "chattering" is destructive to the car and annoying to the occupants. As the makers have no suggestions to offer I will be obliged for your solution of the difficulty. R. R.

New York City.

For some reason the engaging pressure is too abrupt. This could be due to discs of small diameter, brought suddenly into high-pressure by a stout spring. The oil used probably is not the best for the purpose, it is too thin, that is to say, it has not the requisite body. Then, it is too persistent. For clutch lubrication the oil must possess peculiar properties which are not generally well appreciated. What you will have to do is to select a lubricant for the clutch in which the properties will be about as follows:

(a) The body of the oil will have to be pronounced; a fairly heavy cylinder oil, such as will answer well in the cylinders of your motor, will serve the purpose.

(b) This oil, alone, will be of very little value for the purpose, for the reason that it will not squeeze out excepting under very high pressure, and even then it will "flatten" to a very thin film, rather than squeeze out. To give this oil the property of primary lubrication, and to afford it the facility of running out from between the discs, after it has served the purpose, involving a time element in the process of accelerating, it will be necessary to add kerosene.

(c) The amount of kerosene to add, cannot be stated definitely in the absence of information in relation to the lubricating oil which may be used and certain clutch-mechanism characteristics having bearing upon the performance.

(d) In usual cases it is the custom to use cylinder oil and kerosene in equal parts and the results seem to be very good indeed.

In the mean time it is not proper to "slam" the clutch into instant engagement. Nor should the motor be "raced" at the moment of engaging the clutch. The transmission gear set is provided with speed changes for the purpose of enabling the acceleration to take place in gradual increments; unless advantage is taken of the presence of the speed changes it is assured that they are either useless appendages or, they should be used for the intended purpose.

Finally, if the clutch persists in its "fierce" action after the lubrication is adjusted, it is the spring that will have to be modified in some way, in order to give it more limber properties, but the chances are the spring will not have to be touched if the lubrication is properly adjusted and if the car is properly driven.

THE KERNEL IS UNDER THE HUSKS.

Editor THE AUTOMOBILE:

[1,785.]—You say: "There is no occasion for having a full complement of balls, if the bearings without a full complement are properly selected." It will be interesting to know exactly what you mean by this expression. How would you proceed to properly select a bearing without a full complement of balls that would be more effective than a bearing with a full complement?

You say further, "You show utter lack of knowledge of the subject in thus attempting to maintain that a ball bearing increases in ability in direct proportion to the number of balls used."

According to Stribeck,

$$P = kd^2 \frac{Z}{5};$$

Where k is a constant depending on the properties of the material and the form of the ball race.

d is the diameter of the ball.

Z is the number of balls.

Now, let us take two bearings made of the same material and having the same form of race and the same dimensions, both of the balls and races. Then, if Z_1 and Z_2 are the number of balls in each bearing, and P_1 and P_2 the corresponding carrying capacities, we have

$$P_1 = \frac{kd^2}{5} Z_1;$$

$$P_2 = \frac{kd^2}{5} Z_2;$$

and $\frac{P_1}{P_2} = \frac{Z_1}{Z_2}$; or, in other words, the carrying capacities of the two bearings are directly proportional to the number of balls.

New York City. ASHER GOLDEN.

The difference between the facts as depicted by Stribeck and your version lies in the license you take with the figures. You cannot, in a given set of raceways, increase the number of balls, unless the diameter of the balls are decreased. Under the circumstances it would seem as if the use you make of the formula is quite beyond its normal scope. Then, there is a certain irrelevancy about the example you cite which is so self-evident as not to require further discussion.

BALL BEARINGS DEPEND ON ACCURACY.

Editor THE AUTOMOBILE:

[1,786.]—In the discussion now going on in your columns in regard to ball bearings, it seems as if several material points have been overlooked thus far, or at least have not found expression in type. The load carrying capacity of a ball bearing depends not only on the number of balls, but also on the accuracy of both balls and races. Given a bearing with balls exactly spherical and uniform in size to the last thousandth of a millimeter, running between races every element of which is a perfectly true circle; assuming also that the balls and the races are of uniform hardness over all the contact surfaces, it follows inevitably that the load carrying ability of the bearing will bear some rough relation to the number of balls used. This, of course, on the assumption that the balls and races are of the same size in both cases.

Furthermore, the life of the bearing will be increased in substantially similar proportion for equal loads. It is a known fact that even the best ball bearings wear somewhat, although the wear is very small. When analyzed this simply means that each revolution of each ball represents a certain minute wear, whose amount, other things being equal, will bear some relation to the load the ball sustains. Reduce the load per ball by multiplying balls, and the life of the balls will be increased; though possibly this may not hold true of the races, since, what is saved in wear per ball revolution is lost by the greater number of balls going around in a single revolution of the shaft. Incidentally, the same reasoning shows why the life of a bearing is shorter under high than low speeds for equal loads. The wear is simply proportional to the total number of revolutions in the given time.

From the above it follows that if the balls and races are not sufficiently accurate to distribute the load, little is gained by adding balls, since three balls at most will carry the entire load. In other words, the load cannot be distributed among a larger number of balls than three, and it may be borne wholly by a single ball, which must be strong enough to resist crushing. In this case, the only gain from multiplying balls is that the load is transferred more quickly to fresh groups of balls, so that an individual ball carries its maximum load through a smaller arc of revolution.

In a word, the question of load-carrying ability and endurance cannot be divorced from the question of accuracy in size. If the limit of error is well within the compressibility of the balls and races under the loads they sustain, this minute compression will suffice to transfer excessive loads from the larger or irregular balls to the smaller or more uniform balls.

The statement of Mr. Golden in your issue of February 25th, that "when a radial bearing having a filling slot is subjected to end thrust the balls are pinched at the slot, resulting in rapid wear to both balls and races," is true only of bearings in which the balls come in physical contact with the inner end of the filling slot. In the best bearings made to-day with filling slots, these slots are shallower than the ball paths, so that the balls must be sprung in under a greater pressure than they can possibly receive in service. Once in, they never again touch the slot, which virtually no longer exists. In such bearings the ability to endure end thrusts is roughly in proportion to the number of balls provided the requisite standard of accuracy is maintained.

New York City. J. B. BRETZ.

THE VALUE OF ACETYLENE AS FUEL.

Editor THE AUTOMOBILE:

[1,787.]—I read with a good deal of interest the discussion in "Letter No. 1763" in relation to the use of acetylene as a fuel in automobile motors, and it was my privilege some years ago to see a vehicle of this sort, built by some people in a northern New England State. This car was provided by a carbide feed generator.

At the time I gave the matter considerable thought, reaching the conclusion that nothing could come of it commercially. The cost would be excessive from the point of view of gasoline, since it is approximately possible to realize a horsepower using 1 pint of gasoline. This would cost about 1.9 cents. Now, even assuming that acetylene is 3.28 times more powerful than gasoline, it is also true that the cost of the necessary 6 cu. ft. of gas would require the use of 1½ pounds of carbide at a cost of 15 cents.

If the average automobile is provided with a tank for gasoline that will hold 10 gallons, the fuel in the tank would weigh about 120 pounds, which represents the amount of carbide that could be carried without increasing weight. Then there is the water to use in dissolving the carbide, so that double the above weight would have to be considered as the least figure. Without going into further detail, it is plain to be seen that acetylene is not so very attractive at the present time. Nor is any account taken of the troubles which will follow the use of a carbide generator on a large scale. It will be remembered that carbide generators as used in lighting give about all the trouble that can well be tolerated due to the lime formation as a residue. HAROLD H. BROWN.

Boston, Mass.

HOW TO KEEP A WHEEL ON AN AXLE.

Editor THE AUTOMOBILE:

[1,788.]—In "Letter 1755," R. R. Kelsey mentions trouble in keeping the rear wheel keyed tight on the driving axle. This can be accomplished in the manner as shown in Figs. 1 and 2. Fig. 3 represents the present conditions under which the key will not hold.

Fig. 1. Fig. 2. Fig. 3.

Fig. 1 represents the first method. With a half-inch round file make groove at A, opposite keyway, clear through hub. Then file off the portions at B with a half-round file until the shaft bears on hub for one-quarter inch width each side of groove A. Groove A must be not less than three-eighths inch wide after the work is done. This groove is just as important as the bearing surface each side of it. The keyway in the shaft should be planed or milled to a better condition, and the keyway in the hub can be filed to match. The only objection to it is that, theoretically, it throws the hub "off the center" a little more than method number two.

For the second method, take a piece of iron of the same size of shaft and wedge it into the hub and drill a one-half inch hole half in the hub and half in the iron, one-third, 120 degrees around from the keyway, clear through the hub. This gives a half-round keyway in which a piece of steel is easily fitted to make a raised part in the hub, which gives us a three-point bearing.

When inspecting the machinery of the car, hit this key with a hammer, and if it shows signs of loosening up, take it out and put a thin piece of tin under for a shim.

Fulton, N. Y. C. V. ARMSTRONG.

LIKES THE HIDDEN TUBE IDEA.

Editor THE AUTOMOBILE:

[1,789.]—I have just noticed in your "Letters Interesting and Instructive" the suggestion by F. W. Ferguson (1,759) in regard to elimination of the flexible tube, connecting horn and bulb, and mentioning internal piping arrangement. I entirely agree with Mr. Ferguson, having broken two tubes myself, and know that they are the bugbear of cleaners and wipers, besides destroying, by a homely curved line, the sweeping horizontal lines of beauty of the body.

So I have invented a simple system of concealed piping which a well-known manufacturer has taken up and will use on all 1910 models—possibly on some of the 1909 cars as well. Mr. Ferguson certainly has the right idea, and I am surprised that the matter has not been taken up before.

St. Louis, Mo. JOHN GULLY COLE.

Wright's Pupils Make Rapid Progress

King Alfonso of Spain Congratulates Wilbur Wright.

PARIS, March 4.—Minister of Public Works Barthou is such a great admirer of Wilbur Wright that on a recent visit to the district of Pau he rushed out to the aerodrome at Long-Pont and requested a second journey in the flyer. There was only half an hour to spare before the train left for Paris, but it was not many minutes before the machine was made ready and off with the minister and pilot aboard. For ten minutes Wilbur Wright showed his skill as a flyer by describing circles, soaring up and sweeping down, then passing over the heads of the spectators sufficiently high to clear them, but sufficiently low for the Minister to shout down a message. When M. Barthou had rushed for his train, his private secretary was initiated to the joys of a flight.

Two of the Wright pupils, Comte de Lambert and Paul Tissandier, are now efficient in the handling of the flying machine, and although they have not yet been aloft alone, have made several journeys of 20 minutes' duration without the intervention of the teacher. The training of the third pupil, Captain Lucas Girardville, will commence immediately, and it is expected that by the end of March three men will be fully capable of driving the machines. King Alfonso, of Spain, was a recent visitor at Pau, and evinced much interest in the flights.

DATES ARRANGED FOR AERONAUTICAL SALON.

PARIS, March 3.—Paris will have an aeronautical salon in the Grand Palais next Fall, probably from October 2 to 17. Aeroplane constructors, dirigible-balloon builders and automobile constructors interested in the manufacture of light-weight motors have formed a union which will take care of the exhibition. An interview has been had with the Under Secretary of State responsible for the palace in the Champs-Elysees, with the result that assurance has been given that the hall will be placed at the disposition of the flying-machine men. Although no attempt will be made to hold an elaborate show, and heating and light expenses will be cut out altogether, the number of those forming the union is sufficiently high to assure a successful event. Apart from those directly interested in the construction of flying machines, the following automobile firms are actively interested in the movement: Renault, Fiat, Bayard-Clement, Esnault-Pelterie, Gobron, Darracq; two tire firms, Michelin and Continental.

The show cannot be regarded as other than a rival to the annual salon held by the Automobile Club of France. An attempt was made last year to put on foot a separate aeronautical show, but the French club stepped in and arranged for its incorporation in the commercial vehicle section, thus keeping all shows in its own hands. With an independent show for flying machines, and most of the big French automobile firms refusing to have anything to do with the 1909 salon, the task of the national club is not an easy one.

GERMAN AERONAUTICAL NEWS.

BERLIN, March 1.—A new German airship is being built by Dr. Wagner, of the Stettin "Vulcan" Wharf, in connection with the chief engineer of the Kiel Howaldto Wharf, which is to be a combination of the rigid and non-rigid systems without embodying any of their drawbacks. Neither wood nor aluminum will be used, but layers of papierolyn instead, alternating with various fabrics, such as batiste, linen, and unbleached silk, muceous, and steel wires. This will all be welded together and the airship built of the finished material, which is said to be much more durable than either steel or aluminum. Steps have been taken to finance the new concern and acquire the somewhat complicated plant for the preparation of the material. A million marks would be necessary, this including two airships as well, of which the first is designed in a size of 9,000 cubic metres, capable of covering about 65 kilometers in the hour, the shape somewhat resembling a Zeppelin.

Orville and Wilbur Wright have contracted to appear in Berlin in the fall to give an exhibition of their aeroplane. After the various ill-successes of Zipfel in the German capital with his Voisin machine, huge interest is being aroused by the fact that the Wrights' visit is definitely settled.

The project of a German autodrome will not take shape until next year, as the newly founded and most influential company to finance such has deemed it best to wait until the industry has quite thrown off the effects of the depression it has been passing through. Prince Henry of Prussia was present when this decision was arrived at.

SANTOS-DUMONT'S FEATHERWEIGHT FLYER.

PARIS, March 4.—With the return of the fine weather Santos-Dumont's diminutive flyer has again been brought forth for daily exercise. The machine, which holds the record for lightness and smallness, has been modified during the winter, and is now fitted with a two-cylinder, opposed air-cooled engine built by Dutheil-Chalmers. The power plant is above the main bearing surface, and in the slight angle formed by the two wings. The wooden, two-bladed propeller is mounted directly on the engine shaft without the use of a reducing gear. Below the wings is the driver's seat, composed of a piece of canvas stretched from two of the frame members and only five or six inches from the ground. All complete the aeroplane only weighs 330 pounds.

Santos-Dumont's New Diminutive 330-Pound Aeroplane.

AEROPLANE RACES FOR CHATEAULAND IN AUGUST

PARIS, March 3.—American automobilists contemplating a tour through Europe this summer can fix on two districts to visit if they are interested in aeroplane flights. The plains around the old city of Reims will be alive with the hum of mechanical birds at the end of August, and Chateauland will have artificial flyers during the month of September. Both districts are excellent for touring purposes, and will doubtless retain many a car and its occupants from distant parts.

The Reims programme is at present the most complete, and appears likely to be the most attractive. Starting on Sunday, August 22, and continuing until Sunday, August 29, there will be five distinct flying events, comprising an endurance test, a 30-kilometer speed test, a short-distance speed test, a high-flying test, and a race for passenger-carrying aeroplanes. In addition it has been decided that the Gordon Bennett Aeroplane Trophy, to be competed for by national teams of three, shall be included in the Reims programme. There will probably be a French elimination race on Monday, August 23, to pick out the three national champions, and the final race for the Cup on the following Sunday.

The important feature of this event is that all the items on the programme are within the capabilities of present-day aeronauts, and all prizes should be won. Unlike the Monaco meeting, and many of the private races announced for the coming season, there is no special element of danger in the Reims events, and no attempt to set the flyers an impossible task. Even the Gordon Bennett race only requires a minimum of 30-kilometers on a closed circuit, a task which at least thirty machines should be capable of accomplishing before the month of August.

Apart from the Gordon Bennett trophy and money prize accompanying it, the district has raised the sum of $40,000 to be devoted to the aeronautical week. The situation is ideal, the plain being at the very doors of Reims, within 90 miles of Paris, and easily reached from England, Switzerland, Belgium and Germany.

The main feature of the Chateauland aeronautical week will doubtless be the holding of the Aero Club of France Grand Prix for aeroplanes, an event which must be competed on a closed circuit, the minimum distance to be about 30 kilometers. The sum of $20,000 is being raised toward a prize list, this amount to be spread over several events for flying machines. The details of the programme have not yet been drawn up, nor has the exact date been fixed, but it is probable that the week chosen will be early in September.

SILVER DART FLIES EIGHT MILES.

BADDECK, NOVA SCOTIA, March 8.—Douglass McCurdy, in the big aeroplane, *Silver Dart*, by flying eight miles in eleven minutes and fifteen seconds to-day, established a new record in the work of the Aerial Experiment Association, which is conducting a series of flights here under the direction of Dr. Alexander Graham Bell, and doubling the length of its best previous flight.

After four preliminary flights, in which it was seen that the 50-horsepower motor was working splendidly, Mr. McCurdy started from the laboratory and droned over to Stoney Island and back, passing over Baddeck Harbor both times.

LABORATORY FOR AERO EXPERIMENTS.

PARIS, March 3.—The Aero Club of France wants a laboratory for aeronautical experiments, and proposes that the sum of $40,000 shall be devoted to this purpose. The club is prepared to vote a substantial subvention toward the work, and looks for the remainder of the amount in the form of a Government subvention and private subscriptions. At the present moment the Government has the sum of $20,000 to dispose of toward the encouragement of flying, and it is believed that some of this can be obtained for the laboratory, which will be established in or near Paris, and will be the first of its kind.

THE AUTOMOBILE CALENDAR

AMERICAN.

March 11-13.....Milwaukee, Wis., Hippodrome, First Annual Show of Milwaukee, Automobile Club.
March 13-20.....Minneapolis, Minn., National Guard Armory, Second Annual Show, Minneapolis Automobile Show Association. F. E. Murphy, Secretary.
March 15-20.....Rochester, N. Y., Convention Hall, Annual Show, Rochester Automobile Dealers' Association. Chas. J. Moran, Exhibition Manager.
March 22-27.....Toledo, O., Coliseum, Annual Automobile Show, Toledo Automobile Dealers' Association.
March 27-Apr. 3..Pittsburg, Duquesne Garden, Automobile Show, Pittsburg Automobile Dealers' Association.

Races, Hill-climbs, Etc.

March 23-26.....Daytona, Fla., Seventh Annual Florida Beach Races, Florida East Coast Automobile Association. New York Representative, W. J. Morgan, Thoroughfare Building.
March 24-27.....Syracuse, N. Y., State Armory, Automobile Show, Syracuse Automobile Dealers' Association.
April 5-10.....New York City, Carnival Week, New York Automobile Trade Association.
April 10.....New York City, Fort George Hill, Second Semi-Annual Hill Climb of New York Automobile Trade Association.
April 27-30.....Detroit, Mich., Four-Day Endurance Run, Detroit Automobile Dealers' Association.
May 3-6.....Harrisburg, Pa., Third Annual Endurance Run, 700 Miles, Washington, Baltimore, Scranton, Motor Club of Harrisburg.
May 18-19.....Norristown, Pa., Second Annual Endurance Run, Norristown Automobile Club, to Hagerstown, Md.
May 22.....Hartford, Conn., 200-Mile Endurance Run, Hartford Automobile Club.
June 1.....Start from New York, New York to Seattle Race, M. Robt. Guggenheim Trophy, to Alaska-Yukon-Pacific Exposition.
June 11-12.....New York City, Two-Day Mountain Tour and Reliability Contest to Catskill, N. Y., and Return, New York Automobile Trade Association.
June 21-26.....Binghamton, N. Y., Fourth Annual Endurance Run, Binghamton Automobile Club, Albany, Boston, Hartford, Newburgh.

FOREIGN.

Races, Hill-climbs, Etc.

March 31-Apr. 14.Monaco, Italy, Annual Motor Boat Regatta and Championships.
May 2.....Sicily, Targa Florio, Automobile Club of Italy.
May 26.....Russia, Moscow—St. Petersburg Race.
June 10-18.....Germany, Prince Henry Cup Competition.
June 14-19.....Scotland, Scottish Reliability Trials.
June 20.....France, Boulogne-sur-Mer Course, French Voiturette Race, auspices of "L'Auto."
July 13-17.....Belgium, Ostead Automobile Race Week.
August 22-29.....France, Reims, Aeroplane Races and Grand Prix, Aero Club of France.
Sept. 5.....France, Mont Venteoux Hill Climb.
Sept. 11-19.....Italy, Bologne, Florio Cup Race, Automobile Club Bologne.
Sept. 19.....Austria, Semmering Hill Climb.

CONNECTICUT LEGISLATORS ARGUING OVER AUTO LAW

HARTFORD CONN., March 8.—That there is much opposition to the present motor car law is evident, and that it is due mainly to the indiscretion of a small thoughtless element, that never heed the fellow who walks or drives in rural sections is also a fact. Hearings were assigned last week for the discussion of the bills submitted to the present Legislature, some of which would put a decided restriction on the sport. Some of the bills would tend to improve matters. The hearings were before the committee on roads, rivers and bridges, in the hall of the House. Some of the remarks passed were decidedly antagonistic. One bill provides for the fitness of a person applying for a license, which shall be determined by the Secretary of State, and adopts substantially a part of the New Jersey law, which would eliminate the present "reciprocity" feature of the Nutmeg State law and compel every non-resident to register in this commonwealth, reduces the speed limit to 20 miles an hour outside the city limits, 12 miles within and compels drivers to bring their cars to a stop when approaching trolley cars not in motion.

The present law was thought to be a model one, and some so regard it at the present time. In the hands of sensible people it was a good law, but there is the road hog and the speed maniac and it is against them that the public needs some sort of protection. The present law is a good one, but some safeguards must be thrown about it.

Some of the speakers favored a stricter examination of the qualifications of chauffeurs, and ex-Representative Birdseye, of Farmington, an automobilist, spoke strongly in favor of the present law, and referred to a series of resolutions adopted by the Farmington grange, the gist of which were as follows: To secure uniform legislation throughout New England; to provide an effective means for enforcing the law; to tax motorists according to horsepower; to have new markers each year; no colors to be duplicated within four years; to have all licenses expire December 31 of each year; speed limit to be placed at not over 25 miles an hour and 8 miles an hour around corners.

A. C. Judd, proprietor of the Hotel Elton, at Waterbury, spoke for the hotelkeepers, and stated that his establishment, which had been erected at a cost of $400,000, would not pay expenses if it was deprived of the patronage of automobilists.

Walter S. Schutz, attorney for the Automobile Club of Hartford, said it seemed to be practically agreed that 75 to 85 per cent. of motorists are all right and proper. There are from 15 to 25 per cent. that have to be punished. He referred to that feature of the present law which provides that all convictions shall be reported to the Secretary of State. The records show that not one-third of such convictions have been reported and that the fault is with the authorities themselves. Autoists desire to see the man guilty of wrongdoing summarily punished. He suggested that some department of the State be given the enforcement of the law, and that the question of the revocation of licenses be lived up to. Make the law more specific, if necessary, by giving the Secretary of State the right to revoke licenses upon complaint of any violation without conviction.

It is a common impression in local circles that something will happen to the present law. Those who make the laws are well aware of the fact that the innocent always suffer for the guilty, but, nevertheless, the harm has been done and some one must pay the fiddler. Many members of the Legislature own and operate automobiles. Just how soon the matter will be put before the assembly for final action is a question.

COLUMBUS WANTS TO COLLECT LICENSE FEES.

COLUMBUS, O., March 8.—Automobile owners of Columbus are up in arms over the decision rendered by Judge Dillon, of the Common Pleas Court of Franklin County, holding that a municipality has a right to collect the automobile license, provided for in the vehicle license ordinance. When an attempt was made to enforce this, William M. Frisbie, a member of the Columbus Automobile Club, brought a test suit on the ground that the city ordinance conflicted with the State law. The latter provides for registration and identification of motors with a fee of from $3 to $5. The club secured a restraining order and the city auditor refused to accept any fees until the case was decided. The city solicitor took the case up with the result that the law was sustained.

At a meeting of the Columbus Automobile Club steps were taken to carry the case to a higher tribunal. One of the principal objections is the fact that the money sought to be raised by the license does not go for the improvement of the streets. The money received from the State department, on the other hand, save that used in paying the expenses of the office, goes to the good roads fund.

MARYLAND'S GOVERNOR FAVORS AUTO TAX.

BALTIMORE, March 8.—Governor Crothers is determined to have the automobilists of this State pay full taxes as set forth in the Swann automobile bill that they may pay their share of the cost, according to his figuring, of building and maintenance of good roads in the State. He declares that neither he nor the Auto Commissioner are anxious to do anything unconstitutional or to make motoring in this State a burden to owners of cars. Neither does he agree with the owners that they are being worked for oppressive taxation by those handling the bill. He points out that the rule applies to street railway companies which pay a license tax in addition to the general levy on their property.

MICHIGANDERS OPPOSE HORSEPOWER TAX

GRAND RAPIDS, Mich., March 8.—The Michigan State Automobile Association is making plans to oppose Highway Commissioner Earle's efforts to get an additional tax put upon automobiles. The latter's plans, as they mature, seem to be to have a bill introduced into the present session of the Legislature taxing automobiles owned and operated in the State ten cents per year for each horsepower, making the tax on a 60-horsepower car, for instance, $6. This would be in addition to the annual registration fee of $1, which autoists now have to pay, besides the personal property tax on the machine. The commissioner's idea is that automobiles do more harm than other vehicles to the roads and should be made to pay accordingly.

This, however, does not accord with the view of the autoists, and J. R. Jackson, president of the association, says the law will be opposed. "While the associated clubs through the State," says he, "are in favor of road improvements, and are willing to do even more than their share in bringing about improved conditions, such a measure as this would be gross injustice."

The dealers are also taking a hand in opposing it, claiming that it is class legislation, and that if an additional tax is needed for road improvements it should be a general tax on all vehicles, and not a fine on automobile owners for having machines.

NO AMENDMENTS TO OHIO LAW THIS SESSION.

COLUMBUS, O., March 8.—Several bills pending in the Legislature provide for amendments to the State law for the registration, identification and regulation of motor cars. None of the bills have been enacted into a law and some carry unreasonable features. One of the amendments provides for the painting of the number on a glass background to be shown by light during the night. Because of the fact that the Legislature will soon adjourn, it is not believed any material change will be made in the law.

THE AUTOMOBILE

Vol. XX Thursday, March 11, 1909 No. 10

THE CLASS JOURNAL COMPANY
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GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Entered at New York, N. Y., as second-class matter.
The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

SUCCESS IS KNOWN BY ITS COMPANY.

When the automobile was projected into the keeping of man, out of the fertile brain of genius, it presented a moot question, nor could fortune's predictor say that success would deign to permanently occupy a seat in the tonneau. At Boston, seven years ago, when the virgin New England show, as a débutante, rent the placid atmosphere with its siren call, it challenged all the chariots of the world to come and contend for success, and the spectacle was inspiring.

The refined of the "Hub" ventured forth and gathered in the arena to view with critical eye what was, to be sure, a somewhat meager exhibition of automobiles. But the sagacity, which is at the bottom of what is known as New England conservatism, pierced the future, and the show returned, a second time, after a twelvemonth, in better form.

From that day to this the Automobile Show has been an "event," and for seven years New England's representative people came in dignified, but increasing numbers, to witness the advances made, and to support the industry by substantial patronage. Each succeeding year has been a little better than the last, and that strange jewel, consistency, robbed dire prediction of its potency, while the automobile found a fitting response in the hearts of what is said to be the most conservative, nay, critical, audience on the North American continent.

Naturally, the commercial phase of the situation is as an echo of this New England approval of the automobile, and sales were made on a gradually increasing basis each succeeding year, until to-day it assuredly would require an upheaval of the imagination to tender justice to the situation. Boston is now a center of activity in the automobile zone, after which a deluge of excellent business is sure to follow.

* * *

INSTABILITY ACCENTUATED BY SKIDDING.

As the microscope unveils the microbe which may be at the root of a disorder, so does "skidding" disclose acute instability to an autoist who persists in driving around curves at high speed. The very condition of instability which is rendered manifest by skidding on a curve is ever present in cars directly they are guided out of the straight course, and designers as well as drivers must bow to the natural law which enables centrifugal force to overcome traction.

Of two prime sources of trouble, ill devised compensating gearsets (differential gears) should be looked upon as possibly the more serious. If the compensating gears fail to work one of the rear wheels must slip, and it is a property of traction to forfeit its potency instantly slipping begins. This point is adequately illustrated in brakes which fail to perform the braking function if excess pressure is applied enough to cause the wheels to slip. Obviously, the same phenomenon will follow if the differential gear sticks sufficiently to defeat compensation.

The second fault will be present if one of the steering road wheels must slip on a curve, which condition will surely follow if the tie-rod arms are not set properly. Unfortunately, it is impossible to locate these arms in such a way as to render their action universal, but they can be set for the radius of curvity likely to obtain in actual practice, taking into account the manner in which roads are built, with an eye to the free space at the intersections of streets, such as would invite speeding on a curve.

Beyond these fundamental considerations there is nothing to interfere with safety in driving cars around curves, excepting careless workmanship, inferior materials and "feather-weight" designing, unless it is that autoists want to play "bully bender," as boys are wont to do on a handy mill pond, but thinly veiled 'neath meager ice. There is no room in the automobile industry for men who persist in supporting any of these "pastimes," and one of the reasons is that innocent spectators must be protected from the gangrene infested.

* * *

TAXICAB PROGRESS REALLY WONDERFUL.

A study of the taxicab situation will convince anyone that the motor-driven cab is here to stay and must ultimately drive out the horse-driven rig. These convenient little vehicles may make money for the company operating them, but, regardless of this, the public have taken to them and will have nothing else. The larger cities are rapidly increasing their complement of cabs and it is a noteworthy fact that, no matter how small the city, no taxicab service, once started, has been withdrawn. An article elsewhere in this issue gives detailed figures for the number of cabs in use in large cities.

TROUBLE OVER CONTEST CONTROL UNLESS SIGNS FAIL

THERE is trouble brewing in the matter of control and sanction of automobile contests of all kinds, but particularly in the two more prominent branches, as races, tours or reliability runs. There was a time when the national governing body had the last word; what it said went, and the promoters of contests meekly obeyed. Now all that has been changed by ill-advised and domineering methods, which have antagonized even the friends of the "powers that be." From meek obeyance of orders to open defiance is a far cry, yet that is the situation to-day. This spirit of revolt is not sectional, but general, and must inevitably result in some radical change. What this will be is hard to predict at this time, but when a club can plan a complete run, down to the last detail, and then write to the governing body and say (as did the Contest Committee of the Harrisburg Motor Club recently), "upon receipt of the proper official notification we are quite willing to pay to your committee the sum of twenty-five dollars" (the sanction fee as quoted), it is self-evident that trouble is brewing, or, to descend to the language of the street, that there will soon be "something doing."

The chances are that very soon there will be a revolt, and the club mentioned above will doubtless be found in the forefront at that time. The attitude of manufacturers toward the present control is well known and will need no comment here. It is to be hoped, however, in this connection, that the new M. C. A. formed from the manufacturers and importers, will step in and assume control before the situation becomes chaotic and impossible. This is a step that must come as inevitably as to-morrow, and the sooner it comes and thus relieves the present strained situation, in which clubs are "quite willing" to pay for sanctions, the better it will be for all concerned.

A. L. A. M. MEETS AND ELECTS A NEW MEMBER

NEW YORK CITY, March 8.—At the important meeting of the board of managers of the A. L. A. M., held last Thursday, nearly every firm was represented, 26 of the 31 members being present. The report of the show committee made by Col. George Pope, its chairman, was enthusiastically received. The show was the most successful ever held, both as to receipts and business done by exhibitors. Over $40,000 will be rebated to vehicle exhibitors and members of the Motor and Accessory Manufacturers' and Motorcycle Manufacturers' Associations. The rebate not only leaves in the hands of the show committee a large working capital for the next show, but is the highest rate of refund ever made to the exhibitors of a national automobile show, being an increase of nearly 40 per cent. over the rate of rebate of the seventh automobile show at Madison Square Garden in 1908, and of nearly 100 per cent. over the rebate of the same show in 1907. A vote of thanks was accorded the show committee for their work. The same committee (Col. George Pope, chairman; Charles Clifton and E. P. Chalfant, with M. L. Downs as secretary) was appointed to conduct the tenth automobile show at Madison Square Garden, which will be held in January, 1910.

A new member was elected, and in this the city of Detroit scores once more. The latest addition to the licensed family is the Hudson Motor Car Company, of Detroit, Mich., named after its president, J. L. Hudson, one of Detroit's largest merchants. This is a new company, organized for the purpose of manufacturing a four-cylinder car, to be built in large quantities.

THERY, FRENCH RACING DRIVER, DEAD.

PARIS, March 9.—Francois Leon Thery, famous as a racing driver, died at his home here last night. He was born in Paris, April 16, 1879. After a fairly prosperous early career, in which he won many minor contests, in 1903 he entered the employ of Richard Brasier, with whose cars he had unusual success. In that year he won the French elimination tests and many other races. The next year, 1904, in the Gordon Bennett race over the Taunus course, starting from fifth position in an 80-horsepower Brasier, he surprised everybody by easily beating Jenatsky in a Mercedes. The time, 5:50:05, was at the rate of 53 miles per hour, then considered wonderful.

The following year, on July 5, over the Auvergne circuit, he repeated this performance in slower time. This double victory marked the height of his racing supremacy, for although always a big factor, he later failed to capture any of the larger events. He continued with the Richard Brasier firm up to his death.

GRAND PRIX PROMOTORS GET OFF EASY.

PARIS, March 3.—The Automobile Club of France has got out of its Grand Prix with a loss of $800 only. Natives whose land had been rented for grandstands, etc., protested at the abandonment of the race, and certain villages spoke of suing for damages. The matter was settled, however, by the payment of the sum of $800 to the organizing committee to be distributed as an indemnity to those persons who had actually entered into an agreement to rent their land. Medals will be granted to all commissaires who acted at the last Grand Prix races, and, this accomplished, the Racing Board has practically ceased business for twelve months.

FAMOUS THOMAS IS SEATTLE PATHFINDER.

NEW YORK, CITY, March 10.—To add to the laurels which it won in the race around the world, from New York to Paris, the famous Thomas car has now been slated for another strenuous trip, that of the pathfinder from Chicago to Seattle, of the race from this city to the Alaska-Yukon-Pacific Exposition. This has been arranged between the managers of that contest, and the E. R. Thomas Motor Company, of Buffalo, but as yet the car which will inspect the roads from this city to Chicago, if one is thought necessary, has not as yet been chosen.

The Thomas will leave this city on March 15, to run to the Windy City, where John Kane Mills will meet it and go over proposed routes from that point to the Pacific coast. It is expected that it will take at least a month to make the preliminary surveys, and should the mud of Nebraska be forbidding, a southern course, through St. Louis and Denver, may be selected.

KNOX DECLARED WINNER OF SWEEPSTAKES.

NEW YORK CITY, March 8.—The announcement was made recently that William K. Vanderbilt, Jr., referee of the Motor Parkway sweepstake races held on October 10, on the occasion of the formal opening of the Long Island Motor Parkway, has disqualified the Sharp Arrow car, which won in the Garden City class. This disqualification gives the first place and the prize to the Knox Model O, which was driven by William Bourque.

The races were open to stock cars, of which ten had been built previous to the race. It was upon this ground that the referee disqualified the Sharp Arrow, it having been proven to him that the competing car was the only one of its type that had been built. Consequently, the $1,000 will go to Springfield.

What the Clubs are Doing These Days

SAVANNAH CLUB ELECTS OFFICERS.

SAVANNAH, GA., March 8.—At the annual meeting of the Savannah Automobile Club held last week the officers who so successfully guided the organization through the past year and superintended to a great degree the Grand Prize race, were unanimously re-elected. They are: Frank C. Battey, president; J. J. Rauers, vice-president, and A. W. Solomon, secretary and treasurer. The board of governors was chosen as follows: F. C. Battey, J. J. Rauers, A. W. Solomon, George W. Tiedeman, George J. Baldwin, Harvey Granger, F. M. Oliver, C. G. Bell, D. G. Rosenheim, Wright Hunter and A. B. Moore.

President Battey announced the appointment of the following executive committee: Chairman, Harvey Granger; vice-chairman, W. W. Williamson; W. B. Stillwell, George W. Tiedeman, A. W. Solomon, Albert Wylly, George J. Baldwin, Leopold Adler, J. A. G. Carson, F. C. Battey, T. J. Charlton, F. M. Oliver, A. B. Moore, J. J. Rauers, J. M. Dixon, W. B. Stephens, R. M. Hull, Abe S. Guckenheimer and S. E. Theus. Governor Hoke Smith, Governor-elect Joseph M. Brown and Robert Lee Morrell were elected as honorary members.

The splendid success which has attended each of the three races held here, especially the Grand Prize, leads the club to believe that it can get that great event for another time, and has decided to ask for it for next Fall. Pictures of the last race will be sent to every automobile club in this country. Plans for the annual country run, which is held in April, are about to be started. It is not known as yet where the course will be nor when it will be held, these points having yet to be decided, the many good roads giving ample room for choice.

ROCHESTER CLUB PLANS NEW ENGLAND TOUR.

ROCHESTER, N. Y., March 8.—At the recent meeting of the board of directors of the Rochester Automobile Club it leaked out that a long tour is planned for the coming Summer by Secretary Van Tuyle. This event, which is not so very far off, in reality, will include some of the most historic and picturesque places in the East, and will not be competitive in its nature. More than a score of the members immediately volunteered to participate, so that the success of the run is assured.

The purpose of the meeting was for the nomination of officers for the coming year. It was necessary to persuade President Henry G. Strong to run again, but after that was settled there was no difficulty in choosing the others. The rest of the nominees are: Vice-president, William C. Barry, Jr.; treasurer, Rudolph Schmidt; secretary, Bert Van Tuyle. Board of governors—George C. Gordon, F. E. Mason, John E. Morey, A. F. Crittenden, W. S. Hibbard, H. S. Woodworth and John S. Bingeman.

Other minor matters to be disposed of were the adoption of a club pin and the election of George C. Gordon as chairman of the banquet committee. This will be held March 29, in conjunction with the annual meeting. This happy date selection also catches the annual meeting here of the New York State Automobile Association, delegates to which will be entertained at dinner.

MARSHFIELD, WIS., TO HAVE AUTO CLUB.

MARSHFIELD, WIS., March 8.—An automobile club is to be formed in this city as the result of agitation by the Milwaukee Automobile Club, which is leading the fight of the Wisconsin State Automobile Association for better highways in the northern part of the State. All the wealthy lumbermen located here are owners of autos, and as the new club will be largely composed of them, wide influence will be exerted.

QUAKER CITY CLUB REINSTATES PREMIER.

PHILADELPHIA, March 8.—After a hotly contested fight to have its disqualification withdrawn, the Premier touring car which finished the New Year's Day run of the Quaker City Motor Club to Wilkes-Barre and return, with the only perfect mechanical score, but which was disqualified for having gone part of the way up Giants' Despair Mountain without its full complement of passengers, has been reinstated by the club, but with a penalty of 270 points on its time score, placing it thirteenth in the order of those which finished.

This was decided upon at a meeting of the new contest committee of the club recently. The record of the meeting says: "From the records of the observer in said Premier car, and from the official records of the Quaker City Motor Club, it appears that said car passed the checking station at Hazelton 7½ minutes ahead of schedule time and 25½ minutes ahead at the following checking stations: Hamburg, Reading, Pottstown, Norristown and at the finish." The penalty placed against the car was the total, 270 points, one point for every minute ahead of time.

President L. D. Berger has appointed the following to the contest committee, with two additional names still to be announced: Ferd M. Johnson, chairman; Fred C. Dunlap, R. E. Ross, G. Hilton Gantert, W. J. Donnelly, W. West Randall and F. K. Worley.

NORRISTOWN CLUB WILL RUN TO HAGERSTOWN.

NORRISTOWN, PA., March 8.—The contest committee of the Norristown Automobile Club has finally decided upon Hagerstown, Md., as the outer mark for its two-day endurance run which is scheduled for May 18-19. The intermediate controls have not yet been decided upon. The round trip will approximate 300 miles. A pathfinding expedition consisting of three cars—a Matheson, a Crawford and an Overland—will take a trip over the route as soon as the roads will permit.

At the annual election last Friday evening the following officers were chosen to serve during the next twelvemonth: President, John H. Rex; vice-president, Isaac A. Smith; treasurer, L. E. Taubel; secretary, William B. Hart. Board of directors—Lewis E. Taubel, Harry A. Wilson and William B. Hart, for three-year term; Samuel Roberts, John E. Mountain and Frederick M. Jaquith, for two-year term; Robert A. Jackson, A. H. Root and H. C. Carney, for one-year term.

COLUMBUS CLUB HAS REMARKABLE GROWTH.

COLUMBUS, O., March 8.—The Columbus Automobile Club, which recently opened elaborate clubrooms in the Northern Hotel, now has more than 300 members and is quite prosperous. Since the opening, about three weeks ago, the clubrooms have been, and will be kept open permanently, with the officers in charge. The regular meeting is on the first Monday evening of every month, with occasional club evenings. The following are the officers: Max Morehouse, president; Perrin B. Monypeny, first vice-president; George P. Stevenson, second vice-president; Herman Hoster, treasurer; Normal O. Aeby, secretary.

GRAND RAPIDS CLUB STILL AFTER A HOME.

GRAND RAPIDS, MICH., March 8.—The local club is still considering the project of building a new clubhouse, but the organization seems to be about equally divided as to whether the new building should be erected in the city or whether a suburban location should be chosen. A vote on the question will probably be taken at the next meeting.

PENNSYLVANIANS OPPOSE GRIM BILL.

PHILADELPHIA, March 9.—At the annual meeting of the Automobile Club of Philadelphia, at the Racquet Club, last night, a call was sounded for co-operation in the effort to put the Grim bill through the Legislature, now in session, and to antagonize by every legitimate means the progress of legislation introduced by automobile baiters. The various reports were most enthusiastically received, especially that of W. O. Griffith, chairman of the Committee on Routes, Maps and Sign Posts, which showed upward of 1,200 posts erected, a road book printed and much other work. President Powell Evans' report showed a membership total of 708. The effort to locate and build a club house and garage evidenced early fruition of the plans of the committee in charge, headed by Dr. D. Braden Kyle.

The terms of four members of the Board of Governors having expired, three of them were re-elected and W. O. Griffith chosen in place of Isaac Starr. That body is now made up of Powell Evans, S. Boyer Davis, D. Braden Kyle, Henry P. Baily, Jacob J. Seeds, Stedman Bent and W. O. Griffith.

As an appreciation of the services of the last-named gentleman as chairman of the Routes, Maps and Sign Posts Committee he was presented with a handsome high-grade speedometer by the club.

DAVID WILL TACKLE ROAD GOLIATH ALONE.

PHILADELPHIA, March 8.—Manager William P. David, of the local Middleby agency, has been endeavoring to get some of his $1,250-or-under confrères to trot him a heat from this city to Pittsburg and return for a $500 wager, just to demonstrate the effectiveness of the air-cooled principle from the Middleby viewpoint. But after wearing the chip on his shoulder for over a week without landing a competitor he has taken down the money, which he had posted with the editor of the Philadelphia *Inquirer*, and will send his car over the route alone after making the necessary arrangements to have the test officially timed. The route going and returning will be as far as possible over the proposed Philadelphia-Pittsburg cross-State highway, which is now being discussed in the Legislature.

RESTRICTIVE CHANGES IN FRENCH PATENTS.

France for the French seems to be the main idea as embodied in the new French laws as they relate to "leters patent" such as may, in future, be taken out in that country. Under the new law, unless a patent is "worked" within a period of three years from the date of issue it will be void. But this French law is wider in its scope, in that it holds to the dictum that, "the patent courts will be invested with discretionary power to call upon the holder of a patent to show cause why he should not exercise his right in French territory, in an adequate degree." Under the new French law then, a foreign "patentee" is at the mercy of the court; with no more definite right than "the court allows."

MID-WINTER AUTO TRIP TO SAVANNAH, GA.

To some a tour in an automobile means a trip in delightful summer weather, over roads smooth and dry. To others it means a test of endurance, when roads are at their worst. It was under the latter conditions that C. A. and W. A. Warren and Dr. E. D. Loughran, of Kingston, N. Y., have just completed a journey from New York to Savannah in a Stoddard-Dayton Model K roadster. The route followed was via Philadelphia, Gettysburg, Winchester, Natural Bridge, Danville, Charlotte, Columbia, Augusta to Savannah.

HARTFORD SHOW MADE GOOD PROFITS.

HARTFORD, CONN., March 9.—The recent automobile show held in Foot Guard Armory will net the exhibitors a dividend of about 40 per cent., which will be passed upon at the Dealers' Association meeting next week.

BRINGS SUNNY SOUTH TO ZERO COUNTRY.

A quick change from mid-winter in Yellowstone Park, with the mercury forty degrees below zero, to the genial warmth of the slopes with which Southern California borders the Pacific, has been made by H. W. Childs, manager of the Yellowstone Park Association, in a trip with a party in a Franklin touring car, his experience emphasizing anew how wide climatic differences are set at naught by the use of the automobile. San Diego, Cal., was the objective point of the trip, the party thence working up the coast to San Francisco.

Mr. Childs states that the number of tourists will be greatly augmented by automobilists headed for the Alaska-Yukon-Pacific Exposition, and while there have been restrictions on the use of motor cars in Yellowstone Park, a change in their favor has been coming. An evidence of this is the recent replacing of one of the last of the old stage coaches by a Franklin touring car.

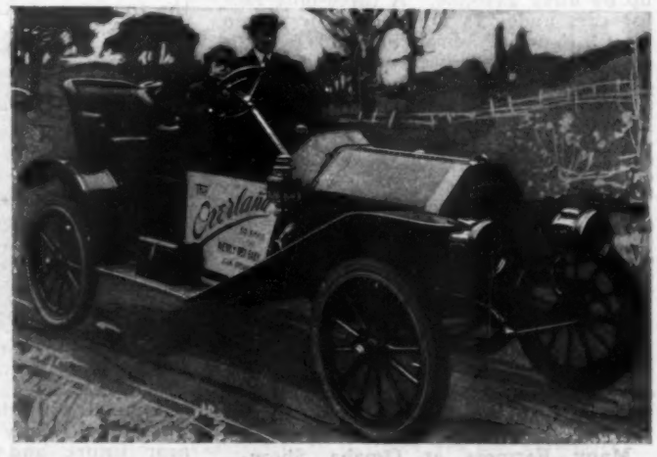
PEERLESS FACTORY ADDITION MOST FINISHED.

CLEVELAND, March 9.—The Peerless Motor Car Company, of this city, is rushing work upon the new office and factory buildings. For some time the Peerless people have been very badly cramped in both executive and factories quarters, and the new structures are expected to relieve the congestion. The factory building will be four stories in height, while the office structure will be half as high. Both will be built of brick, concrete and steel throughout, and will conform to the general plan of all the Peerless buildings.

The trade in general in this city is undergoing a steady boom—not the mushroom kind, but a healthy growth. The past week has seen one new agency come into the local field, while another general garage concern has opened up. J. F. Egensperger, formerly indentified with the Northern in this city, has accepted the agency for the Sterling, built in Elkhart, Ind., and demonstrators are expected this week. The Auto Sales Company, managed by John W. Rauch, has started business at 1121 Chestnut avenue.

NEW CHICAGO HOME FOR PACKARD.

CHICAGO, March 8.—Following the lead of the metropolitan agents of permanently locating in high-class buildings properly located among the right surroundings, the Chicago Motor Car Company, selling agents for the Packard, has leased for 99 years the northwest corner of Michigan avenue and Twenty-fourth street, which, together with the purchase of the property at 128-130 Twenty-fourth street, will give a space for the new building of 60 by 200 feet. The existing buildings will be demolished and a four-story reinforced concrete structure will be erected, to be ready for occupancy by August 1, 1910.



Comedian James E. Rosen in His Overland Roadster.

Mr. Rosen is the famous little comedian who created the part of "Buster Brown," and is now playing in the "Newlyweds" as the baby. He purchased the car at the recent Cleveland Show, and will do extensive touring with it during the vacation season.

How the Chalmers-Detroit Big Shipment Looked When Unloaded.

What is claimed to be the largest single shipment of automobiles ever sent from Detroit to a single dealer, was that of 46 Chalmers-Detroit "30's" that went to H. E. Fredrickson, the Omaha, Neb., agent. The freight cars bearing this consignment left Detroit all together in one train. When they were unloaded at Omaha, they were lined up for the above picture.

Moon Company Arranges Lecture Course.—In order to give its employees a practical idea of automobile construction, instead of confining them to the knowledge of the certain parts which each makes, the Moon Motor Car Company is arranging a lecture course for their benefit exclusively. It is planned to give short talks after the luncheon hour, and a recent experimental lecture showed the amount of interest aroused. At night there will be frequent illustrated lectures, and throughout the course authorities in the automobile engineering field will be called upon. Stewart McDonald, general manager of the company and a member of the Society of Automobile Engineers, will take up more general topics of pertinent interest.

Auto Races on Tampa Track.—A series of automobile races, which will be held at frequent intervals during the year on the half-mile track at the Tampa Bay Hotel, was started by a meet on February 23, the time being slow because of the size and condition of the course. The feature of the day was a five-mile event for touring cars carrying four passengers, which was won by E. T. Bryan's Premier in 7:24, with P. Arguelles' six-cylinder Ford second and W. F. Ferman's Cadillac third. This car was the fastest of the trio, but was held up by dirty gasoline. A three-mile race for cars under 15 horsepower was won by C. B. Witt's Franklin, and one for cars of 22 horsepower or under at five miles was won by H. D. King's Buick.

Refrigerator, Lunch Case and Alcohol Cooker.—Most interesting of all is what may be called a close-coupled limousine in that the tonneau has but one seat to accommodate three. Behind this seat is a false back, to which access is had through doors opening from behind the car. This false back contains lockers the full height of the body, a refrigerator, lunch case with alcohol cooker, and storage space for six suit cases. On the roof, which is of the cabin-deck type, with portholes for ventilation, is a tank which provides water. This is probably one of the most interesting body undertakings that the Quinby Company, of Newark, N. J., ever devised.

Many Farmers at Omaha Show.—Earle J. Moon has recently returned to the factory of the Moon Motor Car Co. from the Omaha show, much impressed with the numbers of farmers interested. He said: "It made me realize what an important person the farmer has become. Only a short time ago these people looked upon automobiles as beyond their comprehension and were much against them, but it is different now, at least in Nebraska. Those at Omaha showed not only an interest but an accurate knowledge of machines and were well able to buy when they found what they wanted."

Close-couple Body with Double Rumble Seat.—Innovations in body designs are still to be seen in the haunts of the advanced designers, and autoists persist in wanting specialized products. There is now at the shops of the J. M. Quinby Company, Newark, N. J., a type of close-couple body with double rumble seats, which will gladden the heart of Owen Osborn, of Philadelphia, for whom it is being built. The double rumble will accommodate the chauffeur and the maid, nor will their confidences reach the ears of the occupants of the body proper. "It is a poor rule that does not work both ways."

Kisselkar Also Stars on Pacific Coast.—Later advices from the scene of the Pasadena-Altadena hill climb show that the performance of the Kisselkars was worthy of note. Three different models were entered, of 30, 40 and 60 horsepower, respectively. The thirty won the touring-car class for cars selling between $1,001 and $1,500; a forty finished second among the touring cars selling between $1,501 and $2,000; a forty roadster won the event for that type of machines selling between the same prices, and the sixty was second in both the $2,500 to $3,000 roadster class and in the free-for-all stock roadster class.

Alco Cars Make Dèbut in Los Angeles.—With W. P. Brooks in charge, a building on South Oliver St. will soon be animated with Alco cars, and the agency is expected to be a "live one" in view of the projected $3,000,000 appropriation, made by Los Angeles County, with which to build roads. The American Locomotive Automobile Company, of Providence, R. I., builder of the Alco, is imbued with the idea that California will absorb many an automobile in the near future and preparation is being made to enjoy some of the prosperity.

Winton Self-Starter Always Ready.—"Proof of the pudding is in the eating of it." A. A. Marshall, of Fitchburg, Mass., went to California, leaving his Winton "Six" on dead storage, and when he returned six weeks later, on Feb. 13, last, it was with no idea that the car would respond instantly to the self-starter, when he tried the trick. Mr. Marshall soon learned, however, that a Winton starter is not rendered "hors de combat" by six weeks of cold storage. The motor responded to the self-starter without ado.

Can't Keep a Good Firm Down.—Although it has suffered a severe loss by the fire which totally destroyed the main factory, the Automobile Supply Mfg. Co., of Brooklyn, N. Y., has been able to take care of the orders on contract at the other two plants on Taaffe place and Classon avenue. At the former plant 12,000 additional feet of floor space has been secured and a new plant fitted up. The president of the company, Louis Rubes, states that all present and future orders will be promptly attended to.

Superior Manganese Comes from Japan.—In dry cells manganese is used for a depolarizer and it is of the greatest importance to have the same not only pure, but in acceptable shape. Formerly the product used came from the land of the "Czar." The Rock Island Battery Company, of Cincinnati, recently placed a large order for Japanese manganese and the company reports that American business relations with the Japanese are excellent. The Japanese product is a little higher in price.

R. F. Hardy Company's Guarantee.—"Sta-Rite" spark plugs, which are well and favorably known to the trade, have proven to be so reliable in service that the company now proposes to offer users what amounts to a perpetual guarantee, in that the plugs will be kept in good repair free of charge for all time. At the works of the company in New York City, it is reported that the plugs returned, thus far, proved to be those which have seen four or five years' service.

Kissel Factory Working At Night.—The plant of the Kissel Motor Car Company, at Hartford, Wis., which was recently enlarged to treble its former size, is now working both day and night shifts on its estimated production of 1,200 cars per year. Increased work has been necessary especially upon the new-size cylinder models, the orders for which exceed the capacity of the plant in producing.

Owen Thomas Will Build New Factory.—Rapidly increasing demand, coupled with ill-adapted rentable buildings, urges the Owen Thomas Motor Car Company, of Janesville, Wis., to adapt the expedient of putting up its own factory. Orders in hand for cars, taking into account prospects, urges the company in undertaking the work of erecting a plant at once.

India Agency Wanted.—An American exporter is preparing to establish permanent show rooms for American goods in India. The plan will be conducted along strictly American lines, and only selected lines of machinery and automobiles will be displayed. Further particulars can be obtained by addressing 3075, Bureau of Manufacturers.

Reliable-Dayton Increases Capital.—The Reliable-Dayton Motor Car Company, Chicago, makers of carriage motor cars and delivery wagons, has increased its capital stock from $25,000 to $200,000, fully paid in. The company was incorporated under the laws of Illinois in 1907, in its third business year.

IN AND ABOUT THE AGENCIES.

Mitchell and Auburn, Wichita, Kan.—Advices from M. L. Arnold, of the United Motor Company of Wichita, Kan., State agent for the Mitchell and Auburn cars, announce that the report published in these columns on February 25 that Mr. Arnold would hereafter be connected with J. L. Sternberg & Company, at 119 East Second street, the agent for the Inter-State car, is incorrect. Mr. Arnold writes that neither he nor his company is in any way connected with J. L. Sternberg & Company and will continue to handle the Mitchell and Auburn at 115 to 119 East Second street, as in the past.

Oakland, Philadelphia.—The Oakland car, which was formerly represented in the Quaker City by the Bergdoll Motor Car Company, will henceforth be looked after by the Oxford Automobile Company, 238 North Broad street, which also handles the Brush and Grout output in Philadelphia and contiguous territory.

American Agency Wanted in Asia Minor.—The Bureau of Manufactures, Washington, D. C., will forward to a business man in Asia Minor any propositions which may be addressed to No. 3110, care of the Bureau. It is reported that there is a field in Asia Minor for automobiles.

Pierce Arrow and Oldsomobile, Austin, Tex.—The Houston Motor Car Company has opened a branch in Austin, in addition to its branch in San Antonio. The company will sell the Pierce Arrow and Oldsomobile.

Royal Tourist, Seattle, Wash.—The newly formed Royal Sales Company has secured the agency for the Royal in the Northwest and will push the sales in Tacoma, Portland, Seattle and other large coast cities.

Jackson and Ford, Morristown, N. J.—Seaman Brothers have been appointed sub-agents for the Essex Automobile Company, of Newark. They will represent the Jackson and Ford cars.

Moline, Davenport, Ia.—C. P. Peterson, of Davenport, has taken the agency for the Moline and will build a large garage. He will have charge of all sales made in the three cities.

White, Denver.—C. S. Newsom, who has been appointed agent for the White steamer in this city, will establish headquarters at Fifteenth street and Cleveland place.

Firestone, Baltimore.—The Firestone Tire & Rubber Company has placed a distributing agency with R. Milton Norris, 516-18 W. Baltimore street, Baltimore.

Reo, Wisconsin.—The Cumberland Auto Company, of Cumberland, has arranged to handle the Reo in six counties in the northern part of the State.

E-M-F and Studebaker, Savannah.—The Graham Automobile Company has taken the agency for the E-M-F 30 and Studebaker cars for this vicinity.

Regal, Youngstown, O.—L. P. Hoffmaster and C. A. Clifford have formed a partnership to handle the Regal car in the northern Ohio town.

Schacht, Montclair, N. J.—W. L. Mason has secured the agency for the Schacht, a high-wheeled auto, manufactured in Cincinnati.

Maxwell, Savannah.—The Maxwell-Briscoe Motor Company has opened a branch in Savannah, with Mr. Hazzard as manager.

Herreshoff, San Francisco.—The Reliance Automobile Company is to act as agent for the Herreshoff in this city.

Overland, Trenton, N. J.—J. C. VanHorn has been appointed local agent for the Overland car.

RECENT BUSINESS CHANGES.

Auto-Car Manufacturing Company.—The truck building firm, the Auto-Car Equipment Company, of Edward street, Buffalo, N. Y., has changed its name to the Auto-Car Manufacturing Company and increased the capital stock to $250,000. It will move into the new buildings at Elmwood and Hertel avenues, May 1. The plant will be one of the most complete in construction and equipment, and will have a capacity for an output of about one thousand machines per year. The Auto-Car Equipment Company has been quoted as the oldest manufacturer of commercial cars in America.

Allen-Swan Company, Brooklyn, N. Y.—Lew Allen, president and general manager of the Allen-Swan Company, the well-known Long Island agent for Stearns cars, has bought out the holdings of Messrs. Kingsley and Swan. He will continue the business at 1384-86 Bedford avenue, and alterations will be hurried so as to fit the place for spring business. Burt W. Phillips will be the new treasurer, and Howard Drakely will continue with the company.

Metropolitan Garage, New York City.—This concern, located at Seventy-seventh street and Broadway, has been purchased by the Monarch Motor Company, which will make numerous improvements and operate it as a high-class storage garage. The garage, which has already made an enviable record, will be made one of the largest and finest in the city.

James L. Gibney & Bros., Philadelphia.—Continental tire agents at 211 North Broad street, have just taken a long-term lease on the double property at 215-217 North Broad street, which is now being fitted up to accommodate their rapidly growing accessories business. The alterations will be completed April 1.

Oshkosh Electric Company, Oshkosh, Wis.—The Oshkosh Electric Company, of Oshkosh, Wis., manufacturers of spark coils, has discontinued business, and its machinery, tools and machinery have been disposed of to various concerns making electrical goods.

Newark, N. J.—On March 15 the official headquarters of the Motor and Accessory Manufacturers, now located in the Union Building, Newark, N. J., will be moved to the Argus building, 17 West Forty-second street, New York City, where the regular business of the association will be conducted.

Kansas City, Mo.—The Ford Motor Company, at 318-320 East 11th street, and the Midland Motor Car Company, at 1608-1610 Grand avenue, are to trade salesrooms.

RECENT BUSINESS TROUBLES.

Motor Commercial Delivery Company of Philadelphia.—Creditors of this concern, with headquarters at 1505-09 Appletree street, have asked that a receiver be appointed for it. The petition states that the company has a total indebtedness of $16,500, with available assets of only $100, apart from machinery, tools, and fixtures valued at $5,430. It is alleged that the company is unable to meet its obligations, is insolvent, and that no assignment has been made for the benefit of creditors.

Pneu L'electric Company, New York City.—A petition in bankruptcy filed against this company, dealers in tires and other automobile accessories, at 1610 Broadway, by attorney for creditors, alleges that the concern is insolvent and unable to pay debts amounting to $3,700.

OBITUARY.

William W. Austin, known as the father of the automobile, died suddenly on March 7 at his home, 37 Shirley street, Winthrop, Mass. At the time of his death, although 85 years old, Mr. Austin was busily engaged in perfecting a late invention, a gasoline lamp. A company, headed by ex-Governor Frank S. Black, of New York, and including as stockholders John D. Rockefeller and others, had been formed to manufacture and market the product. Mr. Austin got his name of "father of the automobile" from the fact that in 1860 he invented and built the first steam auto. During the Civil War he built another that is still in existence and for which he recently refused an offer from the Stanley Automobile Company of Newton, Mass. He was a prolific inventor, having to his credit the steam-propelled bicycle, a sailing catamaran, rubber heels, an airship and many others.

President Taft's White Steamer Leaving White House Garage.

With the advent of the new administration in Washington, D. C., there was also an important change in the White House stable, turning it into a garage, with a gasoline tank displacing the feed bins and from the pegs, instead of harness, inner tubes and casings now hang. President Taft delegated to W. C. Sterling, the Washington representative of the White Company, the task of making the necessary changes. The garage is now in charge of Geo. Robinson, who has been detailed from the War Department to drive the car.

New Quarters of Maxwell-Briscoe Motor Company at 1930 Broadway, New York City.

PERSONAL TRADE MENTION.

George F. Fenno has joined the staff of the Geo. H. Gibson Company, advertising engineers, Tribune Building, New York City. Mr. Fenno is a graduate of Sibley College, Cornell University, and for the past two years has been insurance engineer with the Middle States Inspection Bureau, an organization maintained by 36 of the leading fire insurance companies. His experience in this line has made him widely familiar with engineering and manufacturing plants, a feature which will be valuable to him in his present work of promoting the sale of engineering supplies and equipment by means of publicity.

C. R. Van Auken has been appointed manager of the Detroit branch of the Ajax-Grieb Rubber Company, succeeding C. W. Hatch. Mr. Van Auken has been connected with the tire industry for several years and prior to that time had long experience in the rubber and druggists sundry business.

J. A. Temme, until recently with the Auto Equipment Company of Philadelphia, has been appointed manager of the Boston branch of the Stromberg Motor Devices Company, manufacturers of the Stromberg carbureter.

L. B. Fijux has been appointed manager of the Chicago office of the Willard Storage Battery Company, of Cleveland, and will take charge of the company's interests in Chicago and surrounding territory.

J. Stewart Smith has entered into relations, as general manager, with the Standard Sales Company, of 1779 Broadway, New York City, after several years with Emil Grossman in his various enterprises.

F. W. Suhr is now connected with the Diamond Rubber Company and is located at 223 Columbus avenue, Boston. He was formerly with the Michelin Tire Company as New England representative.

James W. Florida, who drove a Locomobile in the last Vanderbilt race, gave a dinner to his team-mate, George Robertson, in Philadelphia, when the latter returned from New Orleans.

W. R. Stroud, famous as a bicycle racer in days gone by, has just associated himself with the Penn Auto Supply Company, of Philadelphia, and will have charge of the motorcycle and tire end.

Benjamin Gerdelman has been engaged by Gray & Davis as a special representative and will have a salesroom at 4630 Olive street, St. Louis, where he will carry a stock of lamps and parts.

Arthur R. Smith has accepted the position of manager with the new Drummond garage and salesroom for White steamers and Woods electrics, 2024 Farnam street, Omaha, Neb.

J. B. Burwell, former Chicago manager of the Ajax-Grieb Rubber Company, has gone to Minneapolis to take charge of the Ajax branch in that city at 905 First street, West.

TAXICABS AND TRANSIT.

Chicago.—Some one interested in figures has dug up the fact that the city of Chicago has no less than 14 automobiles in service, divided as follows: Police Department, 2; Fire Department, 2; Board of Improvements, 2; Health Department, 2; City Physician, 1; Commissioner of Public Works, 1; Bureau of Streets, 1; Bureau of Engineering, 1; Park Commission, 1; Department of Track Elevation, 1, and Council Committee, 1. Superintendent Doherty's Street Department machine has traveled 97,000 miles in two years. That this is not an isolated record is shown by the additional statement that Deputy Commissioner Paul Redieske, of the Public Works Department, traveled 52,000 miles in a single year—1908. Another machine, recently purchased, has gone 5,000 miles in two months of the winter, which is at the rate of 40,000 miles a year.

Rutherford, N. J.—Three automobile stages, with a seating capacity of thirty each, have been put into service by the Rutherford Transit Company between the Erie Railroad station and various points in the borough. This company, composed mainly of local residents and stockholders, has been recently formed, with a capital of $2,000, to supply proper transportation to the station, and, with a low rate of fare and fixed schedules, it is thought that most of the 1,500 commuters will use the stages. It has been estimated that it will cost $13,870 to operate the three cars yearly, and that the gross receipts will be $16,425, leaving a balance of $2,555.

Girard, Ga.—An automobile line has been established between Girard and Waynesboro, making a daily round trip between these points, a distance of twenty-five miles. Girard does not have a railroad, and this means of transportation is an important one to the town. Regular schedules will be in force with a rate of fare averaging 4 cents a mile. The officers of the company are: President, Charles Brigham; vice-president, W. R. Buxton; general manager, J. B. Heath; secretary-treasurer, W. V. Stephens. A charter will be applied for.

Morristown, N. J.—An automobile chemical engine was recently tested out very thoroughly in the streets here by the Fire Department and town officials. The town is about to purchase a machine for Independent Hose Company, and this one was brought here by the Webb Company for demonstration purposes. The fire extinguishing equipment, consisting of a 40-gal.-long tank, 1,000 ft. of hose, etc., was mounted upon an Oldsmobile chassis.

New Orleans, La.—Automobile patrols are getting so common now that it is considerable of a task to chronicle all of them. The latest of the Southern cities to fall into line is New Orleans, which, with a Studebaker patrol and five police motorcycles, is getting quite up to date. The new machine, which is to be used as an emergency vehicle as well as a patrol, is to be kept at the First Precinct Station.

Cleveland.—Finding it impossible to hold up its end in competition with electric railways on the basis of steam service, the Cleveland Akron & Columbus Railroad is preparing to put on a half-hour suburban service between Columbus and Westerville, using a gasoline-propelled car of large capacity. A large number of cars will be put into service at once.

Tampa, Fla.—A new departure for Tampa will be the installation of a big automobile, equipped with chemical tanks, etc., for fire department service. This move was brought about by the unusually severe service, which wore out the horses faster than the department could afford to buy them.

Brownwood, Texas.—Plans are under way for the establishment of several motor 'bus lines. One is to run between Brownwood and Mays, another to Rockwood, and still another to Mercer's Gap. A meeting is to be called in the near future, and it is expected that $200,000 will be raised for the maintenance of the lines.

Chicago.—The Board of Underwriters has taken delivery of a three-ton fire insurance patrol wagon, made by the Knox Company. This machine, which is of the conventional patrol type, will be put into service at once, working from the No. 3 house at Twenty-third and State streets.

Jacksonville, Fla.—John S. Lane, proprietor of the Ocklawaha Hotel, has started a bus line between the Seaboard Air Line Depot at Tavares and the hotel. The automobile used seats sixteen people and has been very busy ever since it was put into service.

Carlsbad, Tex.—The Carlsbad Commercial Club recently closed the contract with the Midland-Seminole Automobile Company for an auto service between Carlsbad and Midland three times a week and the building of a fine road for this exclusive use.

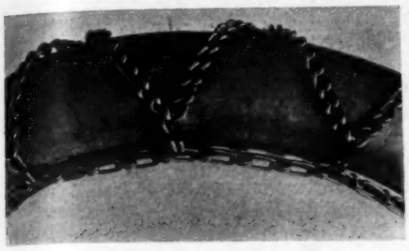
Fort Worth, Tex.—Beginning March 1, a taxicab service will be installed here. Starting with two cars, the Reid Automobile Company will add more as the service demands it. Two large garages which were recently furnished will be utilized.

Boston, Mass.—The Taxi Motor Cab Company has done such an excellent business of late that it has been obliged to add 50 more cabs; in fact, it is expected that this number will not be adequate for their present needs.

Ormond Beach, Fla.—The Florida East Coast Hotel Company is about to start an auto 'bus service between Ormond, Daytona and Palm Beaches. Three cars have been purchased from the American Locomotive Company.

INFORMATION FOR AUTO USERS

Zig-Zag Tire Chain.—The latest thing on the market in the nature of anti-skidding devices is the Zig-Zag tire chain, manufactured by the Motor Appliances Company, 1438 Michigan avenue, Chicago. The feature of this appliance is that it is in the form of a continuous chain held in a zig-zag line along



ZIG-ZAG TIRE CHAIN APPLIED.

the periphery of the tire. The chain itself is of the well-known twisted-link pattern, with special links disposed at intervals throughout its length. These hooks are so placed in the chain, that when it is laid out in a straight line without twist, they alternately point in opposite directions. These hooks are secured to the side chains at such distance apart as to give the tread member a zig-zag line of approximately 45 degrees to the plane of the wheel.

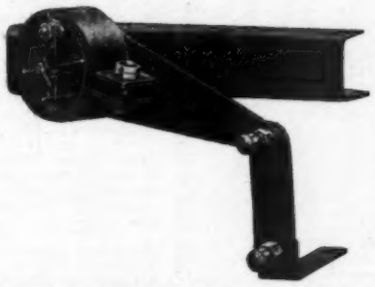
Great efficiency is claimed by the makers in the line of efficiency owing to the fact that the chains engage the ground in an oblique line, thus equally resisting the tendency to skid sidewise, and aiding traction and brake action. The close proximity of the contact points in the chain brings two of these points on the ground at all times, and it is also claimed that this naturally aids their gripping power and eliminates vibration. These chains have been rigidly tested before offering them to the public. Distributing agencies are being rapidly placed.

Swinehart Twin-Tread Bridge Tire.—After exhaustive tests, the Swinehart Tire & Rubber Company, Akron, O., has put on the market its new bridge tire, a section of which is shown in the ac-

SECTION SWINEHART TWIN TREAD TIRE.

companying cut, and which, the makers assert, eliminates the ragged edges and grinding away of the bridges due to faulty construction in the past. Thorough tests have proven to the satisfaction of the Swinehart Company that bridges in the side of a tire, in the form of cylinders, are practically indestructible, and will stand the greatest amount of abuse without cutting or tearing away from the tire proper. These bridges take up the shocks gradually, offering very little resistance at the beginning, but spread and effectually break the shock as the cylinders are flattened out. This, is claimed, makes a very easy riding tire, and nearly as durable as the regular concave tire.

Foster Shock Absorber.—This is announced as a new and simple device for eliminating excessive spring action without destroying the resiliency or free central movement, and the resisting force is applied gradually and in proportion to the severity of the shock. The stationary base of the absorber consists of an oval-shaped steel cup, the length being one-fourth inch greater than the width. The cup is encircled by a one-piece band of flexible spring steel faced with thermoid liner, which bears against the outer surface of the steel cup, thereby producing the desired friction. The amount of resisting force exerted is governed by one adjusting nut, and can be varied as required. Owing to the oval



FOSTER SHOCK ABSORBER IN PLACE.

shape of the cup, the central movement is free, and can be varied from one inch to three inches at the end of the arm. In consequence, spring action is free for a corresponding distance, after which the friction is gradually applied and increased on both the upward and downward stroke. As the arm of the absorber moves off the center the flexible steel band changes its shape to conform to the oval cup, thereby creating a gradual increasing friction to conform to the arm movement. All bearings are case hardened to insure durability, and the friction cup is dustproof. The Foster shock absorber will operate from 12 to 15,000 miles before replacement is necessary, and can be applied to any type of motor vehicle. It is manufactured by Claude H. Foster, 1410 East Fortieth street, Cleveland.

Infallible Metal Polish.—Branch houses established recently in Chicago, New York, New Orleans and San Francisco by George William Hoffman, of Indianapolis, manufacturer of metal polishes and other similar specialties, in answer to a demand in these sections of the country, is regarded by Mr. Hoffman as an indication that standard polishes are wanted not only by autoists but by other people as well. The substance is put up in paste, liquid and powdered form, so that it meets any requirement, and is suitable for use on gold, silver, plated ware, nickel, tin, brass, copper, etc., removing stains and producing a brilliancy equal to newness. Mr. Hoffman suggests it as especially useful in cleaning automobile brasses, band instruments, locomotive and machine mountings, kitchen utensils, metal street signs, show cases, scales, headlight reflectors and many other like articles.

Keystone Grease.—At the automobile shows recently held in New York the stand of the Keystone Lubricating Company, Philadelphia, contained a convincing exhibit showing the special adaptability of this company's product to automobiles. The exhibit consisted of a combined differential and change-gear, lubricated with the No. 3 density grease. The mechanism was driven by an electric motor, and was conveniently arranged to permit a good view of the gears running in the lubricant and show the unique properties of the latter. The mechanism is of the roller-bearing type, and is effectively lubricated, it is stated, by a charge of ten or twelve pounds of the grease. In operation the latter sticks fast to the rapidly revolving parts, forming a thick glib which penetrates between the teeth of the gears and resists being thrown off by them. Moreover, the motion of the gears causes a slow but positive circulation in the body of the grease, which means that every part of the mechanism is permeated by a constantly changing flow of lubricant. The clinging consistency of this grease is stated to be such that the moving parts of the mechanism, instead of making a cavity in the body of the lubricant or clearing themselves of it, as they would ordinarily do, remain smothered in it, so to speak, at all speeds. This property of "sticktoitiveness" is, it is claimed, accompanied by the lowest attainable coefficient of friction, and by perfect chemical neutrality and freedom from corrosive substances that might injure the gearing. It is also stated that the consistency and lubricating quality are unaffected by the wide temperature variations that naurally obtain in automobile work, ranging from exposure to zero weather with the car standing still in winter to the maximum running temperature of the gears on a hot summer day.

English Non-skid Tires.—Cryder & Company, of New York City, are importing the Kempshall non-skid tires which are made in England, with the skid-preventing qualities molded right into the tire, without the use of steel or leather. They are built with a flat tread in which are suction pockets that increase their efficiency, and being low

KEMPSHALL IMPORTED NON-SKID TIRE.

pressure tires minimize vibration and increase comfort. With plenty of the best rubber and fabric, they are said to be nearly immune from punctures and other troubles, ten to twelve thousand miles often being gotten from the one tread.

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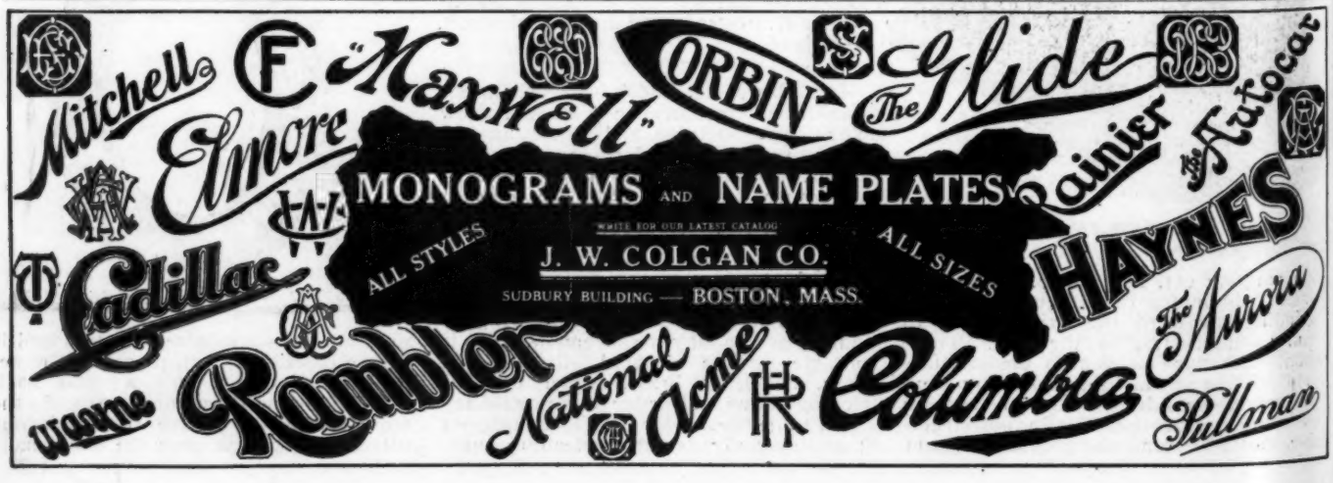
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